

• Check examples of all various types of immunity
 • Examples of heat transfer.

Biology 242: Diversity of Life. Examination 3. Form A
 Dr. James Alexander. Fall 2011. University of Louisville.

When you are done, you must turn in the entire exam and your answer sheet to Dr. Alexander or one of the proctors, and show them your identification, or your exam will not be graded. Keep your answer sheet and test as shielded as possible at all times. Good luck!

Name (PRINT!) [REDACTED] Student # [REDACTED]

For each question, please fill in the appropriate circle on your answer sheet the answer that you think BEST answers the question. Be sure that you read the entire question first. The questions are worth 2 points each.

1. Which of the following choices lists the organs of the human digestive system in the correct order? Starting from the mouth - PESSLA PESSLA PESSLA PESSLA PESSLA

- A) pharynx - esophagus - stomach - small intestine - large intestine - anus.
- B) pharynx - esophagus - stomach - large intestine - small intestine - anus.
- C) esophagus - pharynx - stomach - large intestine - small intestine - anus.
- D) esophagus - pharynx - stomach - small intestine - large intestine - anus.
- E) pharynx - stomach - small intestine - esophagus - large intestine - anus.

2. All of the following are functions of the mammalian kidney except one. Which one is incorrect?
 A) water retention. B) filtration of blood. C) excretion of nitrogenous waste.
 D) regulation of salt balance in the blood. E) synthesis of urea from ammonia.

3. Blood travels from the mammalian heart to the lungs by means of the:
 A) axon. B) vena cava. C) pulmonary vein. D) pulmonary artery. E) aorta

4. Acquiring immunity from a primary immune response to an initial infection is an example of:
 A) artificially-acquired-passive-immunity. B) artificially-acquired-active-immunity.
 C) naturally acquired passive immunity. D) naturally acquired active immunity.

5. You are standing barefoot on a cold stone floor. Your feet rapidly get cold from heat energy directly transferring from your feet to the stones. Which method of heat loss / gain is primarily responsible for the additional heat loss?
 A) conduction. B) convection. C) radiation. D) evaporation. E) metabolism.

6. Which of the following is not a nitrogenous waste produced by animals? A) ammonia. B) uric acid.
 C) urea. D) nitrate. E) all of the above answers (A through D) are nitrogenous wastes produced by animals.

7. In what organism would you see a 'lung' for gas exchange?
 A) crustaceans. B) pulmonate land snails and slugs. C) insects. D) jellyfish. E) flatworms.

8. Which of the following is/are example(s) of epithelial tissue? A) cartilage.
 B) the cells that make up the lining of the lung alveoli. C) endothelium of the capillary.
 D) answers B and C are both correct. E) answers A, B and C are all correct.

9. What portion of a human nephron lies between the Bowman's capsule and the loop of Henle?
 A) the lacunae. B) the ureter. C) the proximal convoluted tubules. D) the Haversian canal.
 E) the distal convoluted tubules.

10. B cells form plasma cells, which in turn produce antibodies. A) True. B) False.

11. An example of a fat-soluble vitamin is/are:
 A) vitamin A. B) vitamin B. C) vitamin C. D) iodine. E) two of the above answers are correct.

VITAMIN A = fat-soluble.
 Which is not a fat soluble vitamin?
 Vitamin B, vitamin C, iodine

PESSLA

Pancreas, esophagus, stomach, small intestine, large intestine, anus.

PESSLA

~~A~~ A PESSLA

Pancreas, esophagus, stomach, small intestine, large intestine, anus

Regulate salt, filter blood, H₂O retention, small intestine, large intestine

Kidneys DO NOT SYNTHESIZE UREA FROM AMMONIA

Heart → lungs = Pulmonary Artery, lungs → Heart = Pulmonary vein

Acquiring immunity from infection → naturally acquired active immunity

Conduction = surface → body, radiation = sun, convection = transfer by fluids

Nitrate is not a nitrogenous waste product! The nitrogenous wastes are: ammonia, urea, and uric acid.

You would see a lung for gas exchange in snails & slugs.

Epithelial tissues = lining of lung & capillaries. Which is not epithelium? Cartilage

Proximal convoluted tubules between Bowman's & Henle.

B cells → plasma cells → antibodies

lacunae.

12 The microscopic chambers or 'islands' in bone that house mature osteocytes are called:

- A) lamellae. B) Haversian canals. C) ganglia. D) inguinal canal. E) lacunae.

13. A new disease affects the basement membrane (the extracellular matrix) of a certain type of animal tissue. Which tissue is affected? A) adipose tissue. B) smooth muscle. C) epithelial lining of the alveoli. D) nerve tracts in the spinal cord.

disease affects basement membrane: anything dealing with epithelium & basement membrane.

14. Which of the following statements (I through IV) are true concerning the functions of the large intestine?

- I. Absorb some vitamins. II. Absorb water. III. Creation of albumins and globulins. IV. Create new red blood cells.

Large intestine absorbs H2O & vitamins. DOES NOT -> RBCs albumin. L. intestine H2O vitamins does NOT create rbc's or albumins & globulins - globulin.

15. A new species of vertebrate was discovered. It has a two-chambered heart, bones, gills, and is found in water.

A knowledgeable biologist would also predict it also had:

- A) fur. B) feathers. C) amniotic egg. D) a tunic of cellulose. E) swim bladder and an operculum.

Bones, gills, H2O -> Swim bladder! Swim bladder & operculum.

16. Which antibody type is a monomer, and is involved in allergic reactions?

- A) IgA. B) IgG. C) IgE. D) IgM. E) IgD.

IgE Research antibodies.

17. How do birds and mammals eliminate their metabolic wastes? A) diffusion across cell membranes and body wall. B) contractile vacuoles. C) protonephridia. D) metanephridia. E) nephrons of a kidney.

Nephrons eliminate Birds & animal

18. In each of the following choices below, blood travels directly from the first structure into the second. However, one choice is incorrect. Which choice is incorrect? A) left ventricle -> aorta. B) vena cava -> left atrium. C) left atrium -> left ventricle. D) capillary bed -> venule. E) right atrium -> right ventricle.

Blood does not flow vena cava -> left atrium. capillary -> venule. Blood does not flow vena cava to left atrium.

19. The smallest unit of the human respiratory system, where gas exchange occurs between respired air and the blood: A) glomerulus. B) Haversian canals. C) corpuscle. D) intercalated disks. E) alveoli.

alveoli = smallest unit human respiratory system.

20. Which of the following is not a general characteristic shared by all craniates? A) extracellular digestion. B) complete digestive tract. C) indeterminate cleavage. D) open circulatory system. E) ionic regulators.

Not all

21. In what type of tissue would you find an osteocyte?

- A) muscular. B) epithelial. C) nervous. D) meristematic. E) connective.

OSTEOCYTE = Bone = connective.

22. Animals require 20 basic amino acids to build proteins. Some amino acid are essential amino acids, some would be called 'nonessential' amino acids. An amino acid that would be called essential:

- A) is not one of the 20 amino acids needed for proteins. B) can be made from other amino acids and other substances provided in the animal's diet. C) is one not used by the animal to produce proteins. D) must be ingested by the animal. E) is less important than a nonessential amino acid in building proteins.

Essential amino acids must be ingested by animals.

23. A new species of vertebrate was discovered. It has a three-chambered heart, lungs, scales made of keratin, and limbs with five toes. Its entire life cycle occurs on land. A knowledgeable biologist would also predict it also had:

- A) fur. B) cartilaginous endoskeleton. C) an amniotic egg. D) a tunic of cellulose. E) fins and an operculum.

amniotic egg = 3 hearts, 5 limbs & scales w/ life cycle on land.

24. Which of the following is false of both hagfish and lampreys? A) they both have a notochord at some time in their life cycle. B) both groups lack jaws. C) they both have pharyngeal gill slits. D) they both possess at least one pair of semicircular canals. E) they both lack vertebrae.

Hag fish & lampreys lack vertebrae.

25. The partial pressure for oxygen would be greatest: A) inside mitochondria. B) in the right ventricle of the heart. C) in the interstitial fluids. D) in the alveolar air space. E) in the red blood cell.

Partial pressure O2 greatest in alveolar air space.

* check where partial pressure would be LEAST

alveolar air space = where partial pressure of O2 is highest.

4 → 3 or 4 → 4 → 2 amphibians & reptiles have 3-chambered heart

26. Which of the following contains species that have a three-chambered heart?
 A) Aves. **B) Reptilia.** C) Mammalia. D) Osteichthyes. E) two of the above answers are correct.

27. An animal equipped with nephrons for collection of nitrogenous wastes:
 A) an insect. **B) a human.** C) an earthworm. D) a flatworm. E) an amoeba. *which has nephrons? animals.*

28. A type of **T-cell** that is thought to help prevent **autoimmune diseases**.
 A) helper T cells. **B) cytotoxic T cells.** C) plasma cells. D) neutrophils. **E) suppressor T cells**

29. To which of the following groups do birds belong?
 A) **uricotelic animals.** B) ureotelic animals. C) ammonotelic animals. *Autoimmune diseases → suppressor T-cells. Birds are uricotelic animals*

30. Oxygen gas is transported in blood most efficiently by:
 A) chemical conversion to water. B) combining oxygen gas with carbon dioxide to form bicarbonate. **C) temporarily binding to hemoglobin.** D) dissolving as a gas in the plasma. E) interacting with hemoglobin to form carbonate. *oxygen best transported by: temporarily binding to hemoglobin.*

31. Amphibians belong to the **subphylum**
 A) Urochordata. B) Mammalia. **C) Craniata.** D) Cephalochordata. E) Chordata. *Phylum → Craniata Kingdom → animalia domain → eukaryota*

32. An ammocoete larva is the larval form of a:
 A) sea-squirt. **B) lancelet.** C) bony-fish. **D) lamprey.** E) hagfish. *Ammocoete larvae = lamprey. Lamprey = ammocoete larvae.*

33. Protein digestion begins in the
 A) mouth. B) stomach. **C) small intestine.** D) large intestine. E) liver. *Protein digestion begins in the stomach. Metabolic wastes → remove amino.*

34. The metabolic waste urea is formed from ammonia; the ammonia in turn was produced from the removal of
 from amino acids. A) carbon dioxide. B) hydroxyl. C) methyl. D) carboxyl. **E) amino.** *Metabolic waste is produced by removal of amino from an amino acid.*

35. The group that has a notochord that becomes partially enclosed by cartilaginous sheath, a cartilaginous skeleton, a circular mouth with keratinized teeth, a rasping tongue, and two pairs of semicircular canals:
 A) sea squirts. B) sharks. C) hagfish. D) bony fish. **E) lampreys.** *Lampreys = 2 pairs semi circular canals.*

36. Which of the following vertebrate groups is not considered a amniote tetrapod?
 A) **Osteichthyes.** B) Reptilia. C) Aves. D) Mammalia. E) all of the above answers are amniote tetrapods. *NOT A TETRAPOD = osteichthyes. They are fish. tetrapod = anything w/ 4 limbs.*

37. Which of the following distinguishes cardiac muscle from both smooth muscle and skeletal muscle?
 A) Only cardiac muscle cells contract. B) Cardiac muscle cells are the only one that are striped or striated. C) Cardiac muscle cells are the only ones that contract involuntarily. D) Cardiac muscle cells are the only ones that contract when you voluntarily wish them to do so. **E) Cardiac muscle cells are the only cells that are branched.** *Cardiac muscles are the only cells that are branched.*

38. Tunicates (sea squirts) belong to the **subphylum**:
 A) **Urochordata.** B) Mammalia. C) Craniata. D) Cephalochordata. E) Chordata. *tunicates belong to subphylum urochordata. TUNICATES → UROCHORDATA*

39. You have found an animal in shallow marine waters during spring break. The animal is segmented, with chevron-shaped muscle blocks arranged along the notochord. It has no bones. The adult swims, and the notochord is retained in the adult. It is in the subphylum:
 A) Craniata. B) Hemichordata. **C) Cephalochordata.** D) Urochordata. E) Echinodermata. *Chevron = cephalochordata. Chevron = cephalochordata.*

40. Which of the following is analogous to the insects' Malpighian tubules, with respect to its function?
 A) mammalian pancreas. B) human appendix. **C) molluscan metanephridium.** D) annelid intestine. E) mammalian spleen.

Analogous to insects Malpighian tubules
molluscan metanephridium.

Malpighian tubules = molluscan metanephridium.

Prevents digestive system from producing enzymes

41. Your doctors proscribe a drug that prevents your digestive system from producing most of the hydrolytic enzymes that digest food materials. Which organ is most directly affected by this drug? Pancreas

- E A) stomach. B) liver. C) small intestine. D) large intestine. E) pancreas.

D 42. What is the body's first line of defense against infections? A) antibodies. B) T-cells. C) B-cells. D) several nonspecific obstacles such as skin and mucus membranes. E) G-cells.

B 43. Which of the following groups (if any) is not a gnathostome? jawless animals
 A) bony fish. B) lancelets. C) mammals. D) amphibians. E) all of the previous answers are gnathostomes.

B 44. The hormone that stimulates the production of stomach secretions and stimulates mucosal cell division of the lining of the stomach: A) cholecystokinin. B) gastrin. C) secretin. D) pepsin. E) bile.

Gastrin = stomach secretions & mucosal cell division in stomach lining.

D 45. The pathway of urine from kidney to the outside is:
 A) kidney - ureter - bladder - epididymis - urethra.
 B) kidney - ureter - epididymis - bladder - urethra.
 C) kidney - urethra - bladder - ureter.
 D) kidney - ureter - bladder - urethra.
 E) kidney - ureter - liver - gall bladder - bladder - ureter.

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B 46. Carbon dioxide is transported in blood primarily in the form of: A) dissolved carbon dioxide gas. B) bicarbonate (HCO₃⁻). C) carbonic acid (H₂CO₃). D) carbon monoxide (CO). E) carbohydrates (CHO).

CO₂ transported in blood by bicarbonate

D 47. The connective tissue that connects a muscle to a bone is called a: A) filament. B) fascia. C) ligament. D) tendon. E) myofibril.

Bone to bone = ligament
bone - muscle = tendon

A 48. The large skeletal muscles in your upper leg are: A) striated and voluntary. B) smooth and involuntary. C) smooth and unbranched. D) smooth and voluntary. E) striated and branched.

Skeletal muscle = striated & voluntary. Striated & voluntary.

A 49. A special drug has been developed that inhibits the contraction of uninucleated cells that have no prominent striations. Which muscle type would be inhibited? A) smooth. B) cardiac. C) skeletal. D) all three muscle types would be equally affected.

Smooth = uninucleated & no striations.

A 50. Which mammal group lays eggs that hatch outside of the mother? A) monotreme mammals. B) marsupial mammals. C) eutherian mammals. D) no mammals lay eggs.

Monotreme animals = lay eggs that hatch outside mother.

skeletal = striated & voluntary.

pharynx - esophagus - stomach - small - large - anus

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kidney ureter bladder urethra.
pharynx esophagus stomach small large anus