

boxed answers are correct

Instructions: Please use a number 2 pencil. Please **PRINT** your name at the top of this sheet, and fill in your student ID number. Next, fill out the name and ID sections on your answer sheet, and blacken in the appropriate circles. You are to answer all questions on this examination. You have the entire period to finish the exam. Make sure you completely erase your answer if you must change it. 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. Purses, open books, sheets, and crib notes cannot be in sight; put all of your things under your desk. Caps and hats must be turned around or taken off your head. Keep your answer sheet and test as shielded as possible at all times. Good luck!

Name (PRINT!) Dipesh Parmar 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 is **not** one of the main features which characterize the Chordates? A) pharyngeal gill slits. B) notochord. C) ventral nerve cord. D) post-anal tail. E) all of the above are features of all chordates.
dorsal, hollow, single, nerve cord

2. The amniotic egg first evolved in which vertebrate group?
A) reptiles. B) egg-laying mammals (monotremes). C) amphibians. D) fish. E) birds.

3. Which vertebrate class includes salamanders and toads? *shelled* 4 frogs
A) Aves. B) Reptilia. C) Amphibia. D) Mammalia. E) Osteichthyes.

4. A new species of vertebrate was discovered. It has a two-chambered heart, 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) a swim bladder and an operculum. *oldest tetrapod group* *bony fish (osteichthyes)*

5. Fishes with bony skeletons, fins, swim bladders and an operculum covering the gills:
A) Osteichthyes. B) Chondrichthyes. C) Amphibia. D) Agnatha. E) Reptilia.
help stay in water column + remain buoyant *tissue flap covers gills*

6. Which of the following vertebrate groups is **not** considered a tetrapod? A) Aves. B) Chondrichthyes. C) Agnatha. D) Reptilia. E) Two of the above answers are not tetrapods.
bony fish *tetrapods include: amphibians, amniotes (reptiles, birds (aves), mammals)*

7. The outermost extraembryonic membrane involved in gas exchange from the embryo and the outside, through the shell. A) allantois. B) chorion. C) amnion. D) yolk sac.
Stones wastes, gas exchange, water conservation *plugs down on water loss* *membrane* *innest + surrounds embryo* *surrounds yolk* *yolk + albumin protein nutrients*

8. Which of the following is/are example(s) of epithelial tissue? A) blood. B) bone. C) lining of the lung alveoli. D) answers A and B are both correct. E) answers A, B and C are all correct.
cover all free body surfaces + are major tissue of glands

9. Which of the following characteristics of blood best explains its classification as a connective tissue?
A) its cells are separated and surrounded by a fluid matrix. B) It contains more than one type of cell. C) It is contained in vessels that 'connect' different parts of the organism's body. D) Its cells can move from place to place. E) It is found within all of the organs of the body.

10. A multilayered arrangement of flattened cells would be called: A) complex squamous. B) stacked cuboidal. C) pseudostratified columnar. D) simple columnar. E) stratified squamous.

11. Tendons and ligaments are composed primarily of: ^{Stores fat, cushion organs & joints} ~~A) adipose tissue.~~ ~~B) stratified columnar epithelium tissue.~~ C) fibrous connective tissue. ~~D) muscle tissue.~~ ~~E) neuroglial cells.~~

12. The small thread-like spaces through which bone cells obtain their nutrients and gases, and through which bone cells can communicate with each other, is called the:

~~A) osteon.~~ ~~B) lamellae.~~ ~~C) lacunae.~~ D) canaliculi. ~~E) Haversian canal.~~
living cells *circles bone matrix arranged in* *pockets containing bone cells* *contain blood & nervous supply*

13. Skeletal muscles are: ~~A) smooth and involuntary.~~ ~~B) smooth and unbranched.~~ ~~C) smooth and involuntary.~~ D) striated and voluntary. ~~E) striated and branched.~~

14. Which of the following traits is **true** concerning the type of muscle cells involved in moving food down the digestive tract? ~~A) cardiac.~~ ~~B) branched.~~ ~~C) striated.~~ ~~D) multinucleated cells.~~ E) involuntary.

15. The body's automatic tendency to maintain a constant internal environment is termed: ~~A) reductive feedback.~~ ~~B) physiologic control.~~ C) homeostasis. ~~D) static equilibrium.~~ ~~E) organogenesis.~~

16. Salivary glands secrete an enzyme or enzymes that start the digestion of:

A) carbohydrates. ~~B) proteins.~~ ~~C) lipids.~~ ~~D) nucleic acids.~~ ~~E) all of the above answers are correct.~~

17. What are essential amino acids? ~~A) those that are absent from fruits and vegetables.~~ ~~B) those amino acids that are generally more abundant in vegetables than in animal flesh.~~ ~~C) those amino acids that are only found in human beings.~~ ~~D) those amino acids that are produced by abiotic means.~~ E) those amino acids that cannot be synthesized from other amino acids or other molecules in a given animal.

18. Which of the following is **not** one of the four classes of essential molecules for animals? A) essential sugars. ~~B) essential amino acids.~~ ~~C) essential fatty acids.~~ ~~D) essential vitamins.~~ ~~E) essential minerals.~~

19. Most nutrients are absorbed across the epithelium of the:

~~A) colon.~~ ~~B) esophagus.~~ ~~C) stomach.~~ ~~D) liver.~~ E) small intestine.

20. A digestive juice with a pH of 2 probably came from the:

A) stomach. ~~B) pancreas.~~ ~~C) mouth.~~ ~~D) colon.~~ ~~E) the jejunum of the small intestine.~~

21. Which of the following is a fat soluble vitamin that acts as an antioxidant?

~~A) vitamin A.~~ ~~B) vitamin B.~~ ~~C) vitamin C.~~ ~~D) vitamin D.~~ E) vitamin E.

22. Flatworms and cnidarians have complete digestive systems. ~~A) True.~~ B) False.
fat soluble *water soluble* *antioxidant* *fat soluble*
vision, growth, repair, water balance *metabolism* *collagen synthesis* *aid in absorbing calcium & phosphorus*

23. Flatworms and humans both use extracellular digestion. A) True. ~~B) False.~~

24. The main function of the villi and microvilli on the surface of the small intestine: ~~A) secrete digestive enzymes.~~ ~~B) enables the small intestine to stretch.~~ C) increases the absorptive surface area. ~~D) produces bile salts.~~ ~~E) helps break food up into smaller particles.~~

25. The secretion of gastric juices in the stomach is controlled by:

~~A) zymogen.~~ ~~B) secretin.~~ C) gastrin. ~~D) glucagon.~~ E) cholecystokinin (CCK).
liver produces bile which contains bile salts that emulsify fat & help absorb fat-soluble vitamins & cholesterol

26. All of the following are functions of the large intestine except: A) absorbing vitamin K. **B) chemical digestion of saturated fats.** C) absorbing or secreting salts. D) compacts and store undigested material. E) absorbing water.

27. The cells that gives rise to red blood cells, white blood cells and platelets are called: A) mast cells. B) nervous cells. **C) stem cells.** D) epithelial cells. E) fibroblasts.

28. The white blood cells that are large, possess kidney shaped nuclei and can transform into macrophages are: A) eosinophils. **B) basophils.** C) neutrophils. **D) monocytes.** E) lymphocytes.

29. Oxygenated blood is always found in arteries, whereas deoxygenated blood is always found in veins. A) True. **B) False.** *not always pulmonary arteries not oxygenated*

30. Which of the following lists the correct path of carbon dioxide moving out from the alveoli to the outside of the body?

- A) alveoli - bronchioles - bronchi - larynx - pharynx - trachea - oral cavity.**
B) alveoli - bronchi - bronchioles - trachea - larynx - pharynx - oral cavity.
C) alveoli - bronchioles - bronchi - trachea - larynx - pharynx - oral cavity.
D) alveoli - bronchi - bronchioles - larynx - trachea - pharynx - oral cavity.
E) alveoli - bronchi - bronchioles - trachea - pharynx - larynx - oral cavity.

31. 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 → right atrium. C) left atrium → left ventricle.
D) capillary bed → venule. **E) right ventricle → pulmonary vein.**

32. In which type of blood vessel do you see a series of one-way valves? A) arteries. **B) veins.** C) capillaries. D) arteries and veins, but not capillaries. E) all three blood vessels have one-way valves.

33. In what organism would you see a tracheal systems for gas exchange?

- A) crustaceans.** B) marine snails. **C) insects.** D) jellyfish. E) birds.

34. Countercurrent exchange in the fish gill helps to maximize:

- A) blood pressure. B) phagocytosis. **C) diffusion of oxygen.** D) active transport. E) osmosis.

35. The meshwork that forms the fabric of a blood clot mostly consists of which of the following proteins?

- A) fibrin.** B) collagen. C) thrombin. D) immunoglobulins. E) albumins.

36. Lymphatic vessels are very similar in form and function to: A) arteries. B) capillaries. **C) veins.**

37. The major metabolic waste you excrete is:

- A) ammonia. B) uric acid. C) glycine. **D) urea.** E) creatine.

38. Which of the following statements is false concerning the function of the mammalian respiratory system? A) the lungs work as a negative pressure pump. B) the lungs contains large numbers of alveoli at the end of bronchioles. **C) the diaphragm and rib cage muscles contract during inspiration (inhalation).**

- D) as the lungs expand, the pressure inside the alveoli increases, relative to the air pressure outside of the body.** E) All of the above statements are actually correct.

39. Carbon dioxide is transported in blood primarily in the form of: A) dissolved carbon dioxide gas.
 B) bicarbonate (HCO_3^-). C) carbonic acid (H_2CO_3). D) carbon monoxide (CO).
 E) carbohydrates (CHO).
40. The tube that leaves your bladder to the outside of your body:
 A) lymphatic system. B) urethra. C) epididymis. D) bile duct. E) ureter.
41. Which of the following animal nitrogenous wastes is the most toxic and is the most soluble in water?
 A) ammonia. B) uric acid. C) nitrate. D) N_2 E) urea.
42. Most of the oxygen is transported through the body in which fashion?
 A) dissolved in the blood plasma. B) dissolved in white blood cell cytoplasm. C) bound to neon atoms attached to hemoglobin. D) bound to the iron atom in hemoglobin. E) as bicarbonate.
43. Plasma cells are _____ that actively secrete antibodies.
 A) macrophages B) neutrophils C) basophils D) T cells E) B cells
lymphocytes that reach thymus
44. Macrophages kill bacteria by: A) secreting complement. B) secreting interferon. C) secreting antibodies. D) engulfing the bacteria. E) secreting antigens.
45. If you are allergic to ragweed, it is because mast cells, in response to subsequent exposure to the ragweed pollen, produce large amounts of _____, which trigger the inflammatory response.
 A) ragweed antigen. B) antibodies. C) interferon. D) complement. E) histamines.
46. Which of the following would **not** be considered part of the nonspecific defenses? *interferons, sebum (skin), phagocytosis in hemolysis, antimicrobial proteins*
 A) the skin. B) lysozyme in tears. C) acidic gastric juices. D) antibodies. E) mucus.
47. Bony fish belong to the subphylum:
 A) Urochordata. B) Mammalia. C) Craniata. D) Cephalochordata. E) Chordata
48. Which of the following cell types is responsible for initiating a secondary immune response?
 A) stem cells. B) memory cells. C) macrophages. D) suppressor cells. E) mast cells.
49. Which of the following is a function of antibody IgE? A) B cell activation. B) lysis of certain microbes. C) activate complement. D) clump bacterial cells. E) work against parasitic worms.
50. After engulfing a pathogen, a macrophage places _____ on its outer surface, which a helper T cell can recognize and become activated: A) MHC proteins and antigens of the pathogen. B) complement. C) cytokines. D) antibodies. E) antihistamines.