

Version B

There are 50 questions worth 2 points each. Use a #2 pencil to put all your answers on the scantron sheet.

- In which part of your body do the cells produce ammonia as a bi-product of protein metabolism?
 - Small intestine
 - Kidney
 - Brain
 - All of these.
- Which organ converts ammonia to urea?
 - bladder
 - kidney.
 - liver
 - Malpighian tubules
- Which of the following is the nitrogenous waste that requires the least amount of water to excrete?
 - feces
 - uric acid.
 - urea
 - ammonia.
- After being lost in the desert for over 3 days with no water, should you start drinking your own urine?
 - No, because urine is poisonous.
 - Yes, because even highly concentrated (dark yellow) urine contains some water.
 - No. All the water in the urine you swallowed will be needed to excrete the urea you swallowed.
 - Yes, if you haven't eaten a lot of salty food.
- In which part of the nephron does the filtrate contain the most water?
 - Bowman's capsule.
 - Collecting duct.
 - Distal convoluted tubule.
 - Loop of Henle.
- To recover water from the filtrate, the kidney nephron uses energy (ATP) to power
 - water pumps in the convoluted tubules .
 - Na⁺ pumps in the ascending loop.
 - Cl⁻ pumps in the descending loop.
 - urine pumps in the bladder.
- Which one statement is true about antidiuretic hormone (ADH)?
 - ADH is produced by the amnion.
 - ADH production is increased by alcohol.
 - ADH increases urine volume.
 - ADH increases the collecting duct's permeability to water.
- Normal IV fluid is most similar to
 - digestive juices.
 - whole blood.
 - interstitial fluid.
 - sea water.
- The gizzard of a bird is most similar in *function* to
 - The teeth of a pig.
 - The digestive cells of a hydra.
 - The crop of a cockroach.
 - The spiral valve of a shark.
- Which of the following is the least important source of digestive enzymes in humans?
 - pancreas
 - stomach
 - liver
 - small intestine
- Which one is a disorder of the colon?
 - jaundice
 - cirrhosis
 - hepatitis
 - diarrhea
- What do the digestive and respiratory systems of humans have in common? They both ...
 - have a huge internal surface area.
 - use countercurrent flow.
 - make contact with the air.
 - All of the above.

13. Fish can live under water but humans can't. What do gills have that lungs don't have?

- A. Arteries and veins.
- B. Respiratory pigments.
- C. Countercurrent flow.
- D. Highly branched surfaces.

14. Which circulatory system lacks capillaries?

- A. insect.
- B. frog.
- C. earthworm.
- D. mammal.

15. The major reason a fish out of water dies so quickly is because the fish's gills do not have

- A. enough oxygen in the air.
- B. a moist gas exchange surface.
- C. a concentration gradient for diffusion.
- D. adequate surface area.

16. Which disease is characterized by loss of the 3-dimensional complexity of the alveolar sacs?

- A. asthma .
- B. cancer.
- C. emphysema.
- D. smoker's cough.

17. Which one greatly *increases* the amount of oxygen that can be transported by the blood ?

- A. low blood pressure.
- B. fever.
- C. white blood cells.
- D. hemoglobin.

18. The insect tracheal system is specialized for the transport of

- A. digested food.
- B. hormones.
- C. carbon dioxide.
- D. nitrogenous wastes

19. In all organisms, what causes oxygen to move out of the environment and into the organism's body?

- A. diffusion down a concentration gradient
- B. osmosis through stomata.
- C. negative pressure breathing.
- D. spiracles along the sides of the body.

20. Maintaining an adequate surface area to volume ratio for gas exchange explains all of the following except

- A. why growing cells must divide.
- B. why fish have countercurrent flow.
- C. why large animals have highly branched gas exchange surfaces.
- D. why fish gills have lamellae.

21. Which one of the following computer-assisted imaging techniques uses X-rays to generate images of the body?

- A. CT scan
- B. PET scan
- C. MRI
- D. iPod

22. The SA node serves as the "pacemaker" because it is the only part of the heart

- A. that contracts on its own, spontaneously.
- B. that contracts faster than any other part.
- C. that is made of neural tissue.
- D. that monitors oxygen levels in the blood.

23. In a 4-chambered heart, what prevents the backflow of blood when the ventricles *relax*?

- A. AV valves.
- B. semilunar valves.
- C. SA nodes.
- D. AV nodes.

24. Which major blood vessel in humans carries oxygenated blood from the lungs back to the heart?

- A. sinus venosis.
- B. pulmonary artery
- C. pulmonary vein
- D. aorta.

25. What carries the contraction stimulus to all parts of the ventricles, ensuring they pump efficiently?

- A. the AV node.
- B. the SA node.
- C. the heart strings.
- D. the bundle of His.

26. During the P wave of an electrocardiogram
- the atria relax.
 - the ventricles contract.
 - the AV valves are open.
 - the atria fill.
27. Which is the largest chamber of the human heart?
- The left ventricle.
 - The right ventricle.
 - The left atrium.
 - The right atrium.
28. What makes the “lub” sound you hear when listening to a beating heart?
- the contraction of the ventricles.
 - the contraction of the atria.
 - the closing of the semilunar valves.
 - the closing of the AV valves.
29. When taking blood pressure with a sphygmomanometer, the sound of turbulence is heard whenever the cuff pressure is
- above systolic
 - below diastolic
 - below systolic but above diastolic
 - below diastolic by above systolic
30. Which is an underlying *cause* of heart attack?
- angina
 - atherosclerosis.
 - angioplasty.
 - asthma.
31. During kidney dialysis, what causes urea to move out of the blood and into the dialysis fluid?
- urea pumps
 - protein metabolism
 - active transport
 - diffusion
32. Artificially stimulating a neuron at a point half way down its axon will produce action potentials that
- travel toward the cell body.
 - travel away from the cell body.
 - one travels toward and one away.
 - quickly fade out.
33. In which organism is there mixing of oxygen-poor and oxygen-rich blood in the heart?
- a fish.
 - a frog.
 - an earthworm.
 - a mammal.
34. What do axons and nephrons have in common?
- Both have sodium pumps.
 - Both have synaptic glomeruli.
 - Both have lysosomes.
 - They have nothing in common.
35. Dr. Morrison used all except one of the following examples to illustrate how the brain tries to make sense of sensory input based on its experience with reality. Which example was NOT used for this purpose?
- phantom limb pain in amputees
 - 2 versus 3-pronged fork
 - “seeing stars”
 - zombies
36. Which structures increase the cell body’s surface area for *receiving* sensory input?
- the dendrites
 - the mitochondria.
 - the synaptic vessicles.
 - the synaptic end bulbs.
37. When interpreting sensory input, the brain is able to tell the difference between bright light and dim light because action potentials from bright light
- have a taller “spike”.
 - are produced in greater numbers per second
 - come in along the optic nerve.
 - The brain can’t tell the difference.
38. Human color vision depends on cones sensitive to which three colors?
- red, orange and blue
 - red, green and blue
 - red, white and blue
 - red, yellow and blue

39. Synaptic vesicles are most abundant in
- the end bulbs of the presynaptic cell.
 - the synaptic gap.
 - the nucleus of the presynaptic cell.
 - the receptors on the post-synaptic cell.
40. At an excitatory synapse, which of the following drugs would have a *tranquilizing* effect on the post-synaptic cell?
- A drug that blocks the action of deactivating enzyme.
 - A drug that blocks the reuptake of neurotransmitter from the gap.
 - A drug that blocks the packaging of neurotransmitter into synaptic vesicles.
 - A drug that binds to post-synaptic receptor sites and opens some of the sodium gates there.
41. What moves neurotransmitter across a synaptic gap?
- Active transport.
 - Receptors
 - Enzymes
 - Diffusion
42. How can the neurotransmitter released from a synaptic vesicle end up back in the pre-synaptic cell?
- diffusion.
 - enucleation
 - regeneration.
 - reuptake
43. The image of an object focused on the retina
- is relayed to the brain point-by-point.
 - is analyzed into abstract components like edges, color and motion.
 - has a copy of the image stored at a specific point in the visual cortex.
 - is sent first to the midbrain for analysis.
44. V.S. Ramachandran found that a man with an amputated left hand sometimes develops a sensory map of the phantom hand on
- his left leg
 - the left side of his face
 - his abdomen
 - his right hand
45. In Dr. Sperry's experiments, suppose a split-brain patient *whose eyes were blindfolded* was allowed to hold a pencil in his *left* hand and then put it down. This patient would be able to
- name the object.
 - use his right hand to recover the object from a group of objects on the table.
 - name the object only if he is allowed to switch it directly from his left hand to his right hand.
 - name the object only if he is allowed to remove the blindfold.
46. Testosterone levels are not affected by cutting the sperm duct (vas) because testosterone is carried by blood vessels from
- the interstitial cells.
 - the prostate gland.
 - the bulbourethral gland.
 - the seminiferous tubules.
47. In humans the ovum is usually fertilized by only one sperm, because the first sperm to reach the ovum's cell membrane triggers a sudden change in
- the mucous plug.
 - the zona pellucida.
 - the chorion.
 - the trophoblast layer.
48. Human seminal fluid
- neutralizes the acidity of the female reproductive tract.
 - provides nutrition to the sperm.
 - has 300 million sperm per teaspoon (3 ml)
 - All of the above.
49. In 1973 the US Supreme Court
- set guidelines for state abortion laws.
 - made all abortions legal
 - made 2nd trimester abortions illegal.
 - set "quickenings" as the cut off for abortions.
50. The *longest* "stage of labor" involves the
- opening of the cervix.
 - delivery of the placenta.
 - delivery of the baby.
 - stretching of the vagina..