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Name (PRINT) _____ Student # _____
For each question, please fill in the appropriate circle on your scantron that BEST answers the question. The questions are worth 2 points each.

1. If there is a total of 20,000 pounds of plant biomass in a small forest, how much biomass of secondary carnivores should be present, following the ten percent rule? *consumer*

- A) 200,000 pounds B) 20,000 pounds C) 2,000 pounds D) 200 pounds E) 20 pounds

2. The pineal gland secretes which of the following?

- A) melatonin. B) glucocorticoids. C) glucagon. D) insulin. E) mineralcorticoids.

3. Epinephrine (adrenaline) is secreted by the:

- A) pineal gland. B) anterior pituitary. C) thyroid. D) adrenal medulla. E) pancreas.

4. The receptor for most steroid hormones is found: A) in the target cell's cytoplasm.

- B) floating free in the blood. C) in the brain. D) on the target cell's outer cell membrane.

5. Ozone depletion is occurring in the stratosphere primarily because of the increase in chlorofluorocarbons (CFCs) in the atmosphere. A) True. B) False.

6. What is the predominant form of carbon in the atmosphere? B) carbon dioxide, CO₂.

- C) carbonate rock. D) oils and natural gas. E) carbon is not found in the atmosphere.

7. A person who was strictly a vegetarian would be classified as a: A) primary producer. B) secondary producer.

- C) primary consumer. D) secondary consumer. E) detritivore.

8. Hypothetically, which of the following communities would persist the longest in isolation (i.e., without the input of energy and materials)? A) herbivores and carnivores. B) decomposers and producers.

- C) carnivores and decomposers. D) producers and herbivores. E) producers and carnivores.

9. Gonadotropin releasing hormone (GnRH) is released by the _____ and GnRH causes the release of _____ from the anterior pituitary. A) hypothalamus; estrogen. B) testes; testosterone.

- C) hypothalamus; FSH and LH. D) testes; FSH, LH. E) testes; relaxin.

10. Once leaving the testes, sperm are stored in and mature in the _____.

- A) epididymis. B) vas deferens. C) prostate. D) oviduct. E) seminiferous tubules.

11. Which of the following is a characteristic of an K-selected species? B) many young produced.

- C) high mortality of young. D) no parental care of young. E) large body size.

12. Which of the following is/are example(s) of a density-dependent factor affecting population growth?

- A) fire. B) hurricane. C) predators. D) drought. E) three of the above are density dependent forces.

* 13. Structures that a female gamete could observe (assuming it could do so!) as it leaves the ovary:

- A) ovary - body cavity - oviduct - uterus - cervix - vagina.

B) ovary - cervix - body cavity - oviduct - uterus - vagina.

C) ovary - uterus - cervix - body cavity - oviduct - vagina.

D) ovary - cervix - body cavity - uterus - oviduct - vagina.

E) ovary - oviduct - body cavity - uterus - cervix - vagina.

14. Secreted by the interstitial cells of the testes: A) luteinizing hormone (LH). B) follicle stimulating hormone (FSH). C) gonadotropin releasing hormone (GnRH) D) estrogen. **E) testosterone.**
15. A mammalian nerve cell produces large magnitude action potentials in response to strong stimuli, and the same cell produces smaller-sized action potentials in response to weak stimuli. A) True. **B) False.**
16. What would a keystone predator prevent? A) parasitism of the prey species. B) mutualistic associations occurring between the prey. C) predation. D) high birth rates. **E) competitive exclusion.**
17. The hypothalamus controls the release of hormones by the anterior pituitary by means of:
A) releasing hormones and inhibiting hormones. B) secondary messengers. C) prostaglandins.
 D) antibodies. E) direct nervous stimulation.
18. Gray squirrels have several sets of pups each year for several years, once they reach maturity. This trait is an example of _____ reproduction.
A) iteroparous (iteroparity). B) continuous. C) superparity. D) semelparous (semelparity). E) integral.
19. In a country, the currently measured growth rate for a mouse population per capita per day is about -0.05 (minus 0.05); for a human population, the growth rate is 0.002. This suggests that the mouse population will undergo exponential growth, but the human population will decline. A) True. **B) False.**
20. In a population whose growth can be represented by a logistic curve, the maximum harvest or yield (in other words, the maximum change in dN/dt) occurs when the population size is: **A) at carrying capacity.** B) near zero. C) at equilibrium. D) at half of the carrying capacity.
21. This ion is present at relatively higher concentrations outside a neuron that currently has a resting potential, compared to inside: A) potassium. **B) sodium.** C) calcium. D) oxygen. E) phosphorous. NO KIN
22. In nerve cells which show a continuous conductance of a action potential traveling down the entire length of the axon, which of the following is not present?
 A) mitochondria. **B) myelin sheath.** C) a synapse. D) potassium. E) a dendrite.
23. In human males, the secretion of LH is inhibited by high levels of this hormone or hormones.
 A) oxytocin. B) prolactin. C) GnRH. D) estrogen and progesterone. **E) the androgen testosterone.**
24. The stimulation of the interstitial cells in males is caused by:
 A) LH. **B) FSH.** C) GnRH. D) estrogen. E) testosterone.
25. Immediately after ovulation, the remains of the ruptured follicle becomes the: A) corpus cavernosa.
 B) corpora allata. C) corpus spongosum. D) corpus albicans. **E) corpus luteum.**
26. If rainfall had a pH of 5.0, could this be called acid rain? A) No, because no rain is acidic. B) No, because the normal pH of rain has a more acidic pH of 5.6. C) No, because acid rain by definition must be a pH of less than 1. D) No, acid rain must have a pH of 14 or higher. **E) Yes, it can be called acid rain.**
27. Which of the following would occur if global warming occurs? A) more land would be exposed as shorelines recede (the sea levels lowers). B) the polar ice caps and glaciers would increase in size. C) the air temperature over the ocean would decrease. D) all plants worldwide would decrease their productivity. **E) tropical species can move northward.**
28. The greenhouse effect is due to the accumulation of: **A) gases that help retain infrared radiation (heat) in the atmosphere.** B) gases produced by green plants. C) enhanced growth of garden plants. D) toxins produced by green plants. ~~E) too much federal debt.~~

29. In all mammals, after oogenesis is complete, _____ functional ova is/are produced by _____.
 A) 4; mitosis. B) 4; meiosis. C) 2; meiosis. D) 1; mitosis. **E) 1; meiosis.**
30. PTH stimulates _____ to break down bone and increase Ca^{++} levels in blood.
 A) islets of Langerhans. ~~B) osteoblasts.~~ C) lymphocytes. **D) osteoclasts.** E) motor nerves.
31. Motor nerves send signals from _____ to _____. A) distributor; engine block. B) brain; sensory receptors.
C) brain; muscles. D) sensory receptors; brain. E) muscles; brain.
32. Sweat glands secrete into small ducts that lead to the surface of the skin. This means that the sweat glands are:
 A) endocrine glands. B) allomone glands. **C) exocrine glands.** D) murine glands. E) mesocrine glands.
33. Resource partitioning is best described by which of the following statements?
 A) the competitively superior species drive the other species to extinction. B) Two species can coevolve and share the same realized niche. **C) Slight variations in niche (or partitioning a niche into two realized niches) allow closely related species to coexist.** D) A climax community occurs when no other niches are available.
 E) Species diversity is maintained by the impacts of a moderate amount of disturbance.
- *34. The part of the brain that is scattered throughout the brain stem and filters incoming sensory messages, activating the cerebrum into wakefulness whenever significant signals are received, is the:
A) reticular system. B) pons. C) limbic system. D) thalamus. E) hypothalamus.
35. A symbiotic relationship in which one species benefits and the second is not affected when the two coexist is called A) mutualism. B) amensalism. **C) commensalism.** D) parasitism. E) competition.
36. The physical location where an organism lives is called its: A) developmental history. **B) habitat.**
 C) community. D) primary production. E) niche.
- *37. The resting potential of a particular nerve cell (cell A) is -70 mV (millivolts). Inputs from two other nerve cells cause the potential in cell A to become less negative inside than outside (raised to -60 mV). This means with additional stimulation that cell A is: A) more likely to generate an action potential. **B) less likely to generate an action potential.**
- *38. You were proscribed a medication (drug) that mimics the effects of thyroxine. Which of the following effects would occur? **A) your metabolic rate would increase.** ~~B) your blood glucose levels would rise.~~ ~~C) your kidneys would conserve more Ca ions, thus less Ca ions would be lost in urine.~~ ~~D) the bronchioles in your lungs would be dilated.~~ E) body cells would be stimulated to undergo mitosis.
39. You take a drug that inhibits the production and release of glucagon. Where does the drug exert its effect?
 A) hypothalamus. B) kidneys. C) in adrenal gland. **D) pancreas.** E) anterior pituitary
40. Glucagon causes _____ in blood sugar, whereas insulin causes _____ in blood sugar.
A) an increase; a decrease B) a decrease; an increase C) both cause an increase.
 D) glucagon has no effect on blood sugar levels E) insulin has no effect on blood sugar levels.
41. A(n) _____ consists of all individuals that potentially can interbreed and produce fertile offspring.
 A) community. B) ecosystem. C) biosphere. **D) species.** E) organism.
42. Which of the following is released from the sarcoplasmic reticulum of a muscle in response to an action potential? A) sodium ions. **B) calcium.** C) glucose. D) acetylcholine. E) calcitonin.

43. Which of the following lists the components parts of a muscle in their correct order, from largest to smallest?

- A) bundle - fiber - myofibril - filament.
- B) fiber - bundle - myofibril - filament.
- C) fiber - bundle - filament - myofibril.
- D) bundle - myofibril - filament - fiber.
- E) bundle - filament - myofibril - fiber.

44. The part of the autonomic nervous system that is most active under ordinary, non-emergency conditions, is the:

- A) parasympathetic nervous system.
- B) sympathetic nervous system.
- C) somatic nervous system.
- D) central nervous system.

45. Prolactin is secreted by the:

- A) adrenal cortex.
- B) anterior pituitary.
- C) thyroid.
- D) adrenal medulla.
- E) pancreas.

46. Thyroid stimulating hormone (TSH) is secreted by the:

- A) testes and ovaries.
- B) anterior pituitary.
- C) thyroid.
- D) adrenal medulla.
- E) pancreas.

47. Oxytocin is secreted by the:

- A) adrenal cortex.
- B) anterior pituitary.
- C) thyroid.
- D) posterior pituitary.
- E) adrenal medulla.

48. Which of the following is **not** an attribute of compounds that bioaccumulate and biomagnify? ~~A) they are stable chemically.~~ ~~B) they are not easily broken down by bacterial activity, or by metabolism within animals.~~

- C) they are able to be sequestered in bone and fat.
- D) they are easily excreted by the kidneys.
- E) all of the above statements are correct.

49. All of the energy from the sun that is trapped by plants (via photosynthesis) ultimately ends up:

- A) in detritivores.
- B) recycling back to the plants.
- C) in the form of plant biomass.
- D) in the form of heat.

50. An omnivore consumes: A) only plant material. B) detritus. C) animals only.

- D) animal material, but the omnivore can also produce its own food by photosynthesis.
- E) both plants and animals.