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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. What is the situation regarding the concentrations of electrical charges on the inside of the axon's plasma membrane during the resting potential phase? (A) more negative inside than outside. B) more positive inside compared to outside. C) There is no difference in electrical charges inside and outside.

2. 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.

3. 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

MFB Fiber

* 4. A motor unit contains: A) muscle fibers only. B) nerve cell fibers only. (C) several muscle fibers and one nerve fiber. D) several nerve fibers and one muscle fiber. E) several nerve fibers and several muscle fibers.

5. Which of the following groups has a rigid ^{inside} endoskeleton? A) molluscs. B) insects. C) cnidarians.
(D) vertebrates. E) two of the above have rigid endoskeletons.

6. The _____ consists of all individuals that potentially can interbreed and produce fertile offspring.
A) species B) ecosystem C) community D) biosphere (E) population

7. The maximum growth rate of a population under ideal conditions is called its: (A) biotic potential.
B) environmental resistance. C) carrying capacity. D) demographic transition. E) maximum population size.

8. Which of the following will not be a result of global warming? A) rising sea level. B) coastal flooding.
(C) increase in the number and size of glaciers. D) changes in rainfall patterns. E) changes in agricultural productivity patterns.

9. If the current rate of increase was 2%, then the doubling time ($DT = 70/r$) for the entire world's human population would be _____ years. A) 0.04 B) 210 (C) 35 D) 23.3 E) 70 $70/2 = 35$

* 10. 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.

11. The buildup or increase in the amount of toxic pesticides inside a single animal over time is called:
(A) bioaccumulation. (B) biomagnification. C) trophic enrichment. D) intoxication.
E) pesticide concentration.

12. The nutrient cycle that especially depends on various bacteria to move the nutrient from one compartment to the next is the _____ cycle. A) hydrologic (water). (B) nitrogen. C) carbon. D) phosphorus.

BFM Filament

Post-Oxy Antidiur

Ankr - Thyroid stim

13. Which of the following is secreted by the posterior pituitary? ^{T4} A) thyroxine. B) Adrenocorticotrophic hormone (ACTH). C) oxytocin. D) growth hormone (GH) E) two of the above answers are correct.

^{increase glucose}
14. An increase in glucagon levels in the blood would B) cause an increase in blood glucose levels.
A) cause a decrease in blood glucose levels. C) cause an increase in blood calcium levels. D) cause a decrease in blood calcium levels.
E) cause no change in blood calcium or blood glucose levels.

15. You have not taken in any water today, and you are dehydrated. The ADH levels would be _____ in your blood. A) high. B) low.

16. Which of the following directly controls the activity of the pituitary?
A) pineal gland. B) parathyroid gland. C) hypothalamus. D) thyroid. E) thymus.

17. Which of the following types of biomolecules is not used as a hormone?
A) carbohydrates. B) steroids. C) polypeptides. D) modified amino acids.

18. Where does acetylcholine carry out its function in a nerve cell? A) in the midsection of an axon.
B) at the synapse. C) at the nucleus. D) at the endoplasmic reticulum. E) at the nodes of Ranvier.

19. The part of the brain that maintains homeostasis, primarily by regulating the activities of many of the endocrine glands, is the: A) pons. B) reticular system. C) limbic system. D) thalamus. E) hypothalamus.

20. The part of the brain that is involved in memory of hearing and vision is the:
A) parietal lobe. B) temporal lobe. C) frontal lobe. D) occipital lobe. E) hypothalamus.

21. When TFR (total fertility rate) for humans is equal to about 1 in MDCs, then the human population will _____.
A) decrease, then increase over time. B) increase, then decrease over time. C) remain about the same size over time. D) increase over time. E) decrease over time.

22. The hypothalamus controls the release of hormones produced by the anterior pituitary by means of:
A) releasing hormones and inhibiting hormones. B) secondary messengers. C) prostaglandins.
D) antibodies. E) direct nervous stimulation.

23. You were proscribed a medication (drug) that mimics the effects of thyroxine. Which of the following effects would occur? ^{T4} 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.

24. Epinephrine (= adrenaline) is secreted by the _____ in response to stress.
A) pineal gland. B) anterior pituitary. C) thyroid. D) adrenal medulla. E) pancreas.

25. The doubling time for a population is the time it takes for: A) half of the population to reach maturity
B) a population to double in size with a constant rate of increase [r] C) the number of mature females in a population to double in number D) the rate of increase [r] in a population to double
E) the population's biomass to double in weight

26. 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.

27. One function of the corpus luteum is to: A) nourish and protect the ovum. B) produce prolactin in the alveoli.
C) produce progesterone and estrogen. D) convert into an ovum-producing follicle upon proper hormonal stimulation. E) stimulate ovulation.

28. An example of a density-independent factor which limits population growth: A) intestinal bacteria parasitism in humans. ~~B) social stress in a dense population of rats.~~ ~~C) a hurricane in a tropical swamp.~~ ~~D) competition among robins (whose population varies in size from year to year) for nest sites.~~ ~~E) predators feeding upon zebras.~~

29. 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 more negative inside than outside (lowered to -80 mV). This means with additional stimulation that cell A is: B) less likely to generate an action potential.

A) more likely to generate an action potential. B) less likely to generate an action potential.

30. The change in the potential of cell A (in question 29) from -70 mV to -80 mV is called D) hyperpolarization.

31. Which of the following is a characteristic of an r-selected species? B) no parental care of young. ~~C) few young produced.~~ ~~D) low rates of reproduction, r.~~ ~~E) large body size.~~

32. One type of cactus grows for about a century, then it reproduces once and dies. This trait is an example of D) semelparous (semelparity). ~~A) iteroparous (iteroparity).~~ ~~B) continuous.~~ ~~C) superparity.~~ ~~E) integral.~~ *simultaneocy*

33. The functional role of an organism is that organism's E) niche. ~~A) developmental history.~~ ~~B) habitat.~~ ~~C) community.~~ ~~D) primary production.~~

34. Which hormone exerts an antagonistic action to insulin (i.e. it has an opposite effect)? D) glucagon. ~~A) thyroxin.~~ ~~B) epinephrine.~~ ~~C) growth hormone.~~ ~~E) calcitonin.~~ *movement of glucose*

35. The hormones secreted by the adrenal medulla are: E) catecholamines. ~~A) proteins.~~ ~~B) sugars.~~ ~~C) steroids.~~ ~~D) glycoproteins.~~ *produces glucose*

36. The relationship between robins and sparrows, who could fight with each other over food and nest sites, would best be described as: B) competition. ~~A) mutualism.~~ ~~C) commensalism.~~ ~~D) predation.~~

37. Resource partitioning is best described by which of the following statements? C) Slight variations in niche (or partitioning a niche into two realized niches) allow closely related species to coexist. ~~A) the competitively superior species drive the other species to extinction.~~ ~~B) Two species can coevolve and share the same realized niche.~~ ~~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.~~

38. Consider the following food chain: 10^0 grass \rightarrow 10^1 grasshopper \rightarrow 10^2 mouse \rightarrow 10^3 snake \rightarrow 10^4 hawk. How much energy stored in the autotroph would be passed to the quaternary consumer (top carnivore)? E) 0.01%. ~~A) 12.5%~~ ~~B) 10%~~ ~~C) 1%~~ ~~D) 0.1%~~

39. Which of the ecological pyramids can never be inverted? D) pyramid of energy. ~~A) pyramid of numbers.~~ ~~B) pyramid of Giza.~~ ~~C) pyramid of biomass.~~ ~~E) all of the above cannot be inverted.~~

40. Which of the following materials does not cycle in an ecosystem? B) energy. ~~A) water.~~ ~~C) carbon.~~ ~~D) phosphorus.~~ ~~E) all of the above materials cycle in an ecosystem.~~ *flows*

41. In most animals, after spermatogenesis is complete, 4 functional gametes is/are produced by meiosis. ~~A) 4; mitosis.~~ ~~B) 4; meiosis.~~ ~~C) 2; meiosis.~~ ~~D) 1; mitosis.~~ ~~E) 1; meiosis.~~

42. Once leaving the testes, sperm are stored in and mature in the A) epididymis. ~~B) vas deferens.~~ ~~C) prostate.~~ ~~D) oviduct.~~ ~~E) seminiferous tubules.~~

goes behind bladder a to urethra

43. In humans, fertilization typically occurs in the: Oviduct
 A) follicle. B) ovary. C) fallopian tube (or uterine tube). D) body of the uterus. E) vagina.
44. The structure or structures found in human females that produce mucus (a lubricant for intercourse):
 A) bladder. B) Bulbourethral glands. C) Bartholin's glands. D) glans. E) prostate.
45. The hormone that causes a follicle to begin maturing is:
 A) estrogen. B) LH. C) androgen. D) FSH. E) progesterone.
46. When the population is at carrying capacity: A) birth rate is greater than death rate
 B) birth rate is less than the death rate C) birth rate equals twice the death rate
 D) the death rates is twice the birth rate E) the death rate and birth rate are equal
47. A population whose growth curve takes the shape of a S is said to exhibit ____ growth.
A) logistic. B) opportunistic. C) exponential. D) saturation. E) linear.
48. The carrying capacity is the: A) largest-sized individual that can live in the ecosystem. B) the number of species that can be supported at any time in the habitat. C) the highest possible population size for a species.
 D) the maximum sustainable number of species in an environment. E) the maximum sustainable population size for a species in an environment.
49. 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.
50. Sensory nerves send signals from _____ to _____. A) distributor; engine block. B) brain; sensory receptors.
 B) brain; muscles. D) sensory receptors; brain. E) brain; muscles.