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Full Name _____ **Grade - 12** **Section** _____ **4th Quarter Final Exam**

Subject – Biology **Year: 2012 E.C** **Exam. Room:** _____ ***Time allowed: 2:00***

DIRECTIONS: Each of the following questions is followed by four possible alternatives. Read each question carefully and blacken the letter of your choice on the separate answer sheet

1. Which one is the correct procedure in a scientific method?
   A. Ask question→ construct hypothesis →carry out an experiment → report results
   B. Do background research→ ask question→carry out an experiment →report results
   C. Do back ground research→construct hypothesis→ carry out an experiment→ report results
   D. Ask question→do background research→construct hypothesis→analyze result→ carry out an experiment
2. In which of the following experiments does temperature acts as a confounding variable?
   A. The effect of fertilizer on wheat plants under green house condition.
   B. The reaction of humans to a new drug under laboratory condition
   C. Analyzing the CO_2 uptake of wheat plants under field condition
   D. Analyzing the rate of enzyme activity in humans under controlled environment
3. The second most abundant element in our cells is _____
   A. Oxygen B. Carbon C. Nitrogen D. Hydrogen
4. The classification of proteins into fibrous and globular is based on _____
   A. their molecular weight C. their function
   B. the number of chains attached D. their molecular shapes
5. Which statement concerning Benedict's test for reducing sugars is correct?
   A. It distinguishes between glucose and galactose
   B. Yellow color shows that a reducing sugar is present
   C. It doesn't require the presence of heat in carrying out the experiment
   D. We neutralize the solution by adding sodium carbonate
6. The basis of reducing sugar is the change of the chemical _____
   A. Mg^{2+} to Mg + B. Na^{+} to Na^{+2} C. Cu^{2+} to Cu^{+} D. Cu^{+} to Cu^{2+}
7. The reason starch stains blue or black with iodine is:
   A. The reaction between amylose molecule and iodine
   B. The reaction between amyloectin molecule and iodine
   C. The reaction between cellulose and amylopectin
   D. The reaction between cellulose and amylose
8. If water were less viscous it would:
   A. Make blood too thick to pass through vessels C. not support organelles
   B. Damage organelles D. drown fish

9. The challenges of treating HIV do not include:
   A. Multiple strains(types) of the virus
   B. Antibiotic resistance
   C. High mutation rates
   D. Lack of access to treatment
10. The scientific method:
   A. Helps to remove bias
   B. Provide a framework for inquiry
   C. requires hypothesis that can be tested
   D. All of the above
11. To use quadrants and transects to determine change in population distribution over an area you would
   A. Cover the entire area with quadrants
   B. Use the quadrant every 5m along the transect
   C. distribute them randomly
   D. distribute them in locations that seem best
12. An instrument which is used to measure the height of trees or of slopes in the area is called
   A. A. Data logger B. Flow meter C. Theodolite D. $_{P}$H kit
13. The reliability of an experiment is increased by:
   A. Carrying out repeat experiments
   B. Calculating an average result
   C. minimizing personal judgment
   D. All of the above
14. Pentoses are:
   A. disaccharides containing five carbon atoms
   B. monosaccharides containing five carbon atoms
   C. disaccharides containing five oxygen atoms
   D. monosacchrides containing five oxygen atoms
15. All are traits of amylose except
   A. Insoluble
   B. A lot can be stored in small space
   C. branching to allow fast hydrolysis
   D. there are no osmotic effects
16. Photosynthesis is impossible at a depth of 1000m because:
   A. It's too cold
   B. There's not enough CO_2
   C. There's only blue light
   D. There's no light
17. Glycoprotein's:
   A. Act as antigen-markers for the immune system
   B. Store energy in a combined protein carbohydrate form
   C. Are found in plasma membrane
   D. A and C
18. Which of the following can reverse or reduce an allosteric enzyme inhibition?
   A. Depleting the end product
   B. Adding more end products
   C. Adding more substrate
   D. Depleting the substrate
19. Which of the following factors affects enzyme activity without denaturing the enzyme molecule?
   A. High temperature B. Low pH C. High pH D. Low temperature
20. When glucose molecules are joined by α-linkage which of the following carbohydrate is obtained?
   A. Lactose B. Cellulose C. Glycogen D. Starch
21. The most abundant inorganic molecule in the atmosphere that traps heat is:
   A. H_2S B. CO_2 C. H_2O D. O_2
22. What is the ultimate source of the electrons that replace those lost from the Photosystem II during photosynthesis?
   A. Water B. Photosystem I C. Chlorophyll- a D. Chlorophyll-b
23. In which part of mitochondria does the Krebs cycle take place?
   A. On the outer membrane surface
   B. On the inner membrane surface
   C. In the matrix
   D. In the inter-membrane space
24. If a homogenate of eukaryotic cells is spun in a centrifuge, which of the cellular organelles settles out first?
   A. Mitochondrion B. Ribosome C. Chloroplast D. Nucleus

25. Which of the four stages in the aerobic respiration of glucose does not produce ATP?
    A. Glycolysis
    B. Electon transport and chemiosmosis
    C. Krebs cycle
    D. The link reaction
26. In an experiment to study photosynthesis, a plant was provided with radioactive carbon dioxide as a metabolic tracer and the radioactive carbon was incorporated first into oxaloacetate. Which one of the following would best characterize this plant?
    A. C3 plant B. CAM plant C. C4 plant D. Heterotrophic plant
27. In the process of photosynthesis light is necessary to:
    A. Split carbon dioxide
    B. Release energy
    C. Produce ATP and a reducing substance
    D. Combine CO_2 and H_20
28. During photosynthesis, which of the following is the first step in the transduction of light energy to chemical energy?
    A. Photolysis of water B. ATP formation C. Carbon fixation D. Glucose formation
29. Which of the following results in the production of oxygen during photosynthesis?
    A. Reducing NADP+
    B. Electron transfer system of photosystem I
    C. Splitting of the water molecules
    D. Electron transfer system of photosystem II
30. Which one is first inhibited if a cell contains excess of ATP?
    A. Krebs cycle
    B. Glycolysis
    C. Oxidative phosphorylation
    D. Electron transport
31. The practice of modern agriculture that reduces crop biodiversity is:
    A. Overgrazing
    B. Forest clearing
    C. Growing few high yielding varieties
    D. Growing landraces
32. Which of the following is usually taken as a signal for the final stage of HIV infection?
    A. Outbreak of some genetic diseases
    B. Signs of the disease *Kaposi's sarcoma*
    C. Uninfected T-helper cells present
    D. No infection by other parasitic diseases
33. In ecological context, which of the following is a population?
    A. All living organisms in a habitat
    B. All individuals of same species in a habitat
    C. All living producers in a habitat
    D. All the consumers in a habitat
34. Through which of the following processes do all living organisms contribute to carbon cycle?
    A. Photosynthesis B. Decomposition. C. Cellular respiration D. Combustion
35. Which of the following is NOT true about the flow of energy in the ecosystem?
    A. It is recycled by decomposers
    B. It passes from one trophic level to the next
    C. It enters the ecosystem in the form of light
    D. It leaves the ecosystem in the form of heat
36. What is the nutritional mode of those bacteria which decompose dead organic matter and thus recycle nutrients?
    A. Saprobiotic B. Parasite C. Autotrophic D. Symbiotic
37. Current human concerns such as famine, pestilence and environmental degradation would be solved through the use of:
    A. Irrigation B. Biological principles C. Aquaculture D. Terracing
38. What is the other name for the primary consumers of the ecosystem?
    A. Predators B. Carnivores C. Green plants D. Herbivores
39. In which organ of the human body are more bacteria found?
    A. Large intestine B. Stomach C. Small intestine D. Lungs

40. Which one of the following is NOT in situ conservation of biodiversity?
    A. National parks B. Sanctuary C. Biosphere reserves D. Botanical garden
41. Carbon cycle is important in nature because:
    A. it continuously reuses and recycles carbon in the ecosystem.
    B. the amount of energy before and after a reaction must be the same.
    C. it consumes oxygen and nitrogen in the atmosphere.
    D. it is used in energy capture and recapture.
42. Which of the following represents the population growth curve of a species with limited resources?
    A. Exponential B. Logistic C. Logonormal D. Competitive exclusion
43. What major consequence does primary ecological succession involve normally?
    A. Number of species present decreases C. Habitats become harsher and deteriorate
    B. Abiotic factors become less favourable D. Complexity of food webs increase
44. How quickly a population would increase or decrease in size is probably least influenced by the presence of:
    A. Adequate supply of oxygen C. Severe inter-specific competition
    B. Carnivores and herbivores D. Disproportionate human races
45. What does a low value for Simpson's index of diversity normally indicate to the researcher?
    A. An area with high number of endemic species C. An area with plants but no species of animals
    B. A biodiversity hotspot with abundant species D. An area dominated by one or just a few species
46. A country with a high youth population but a low old age population and low infant population shows?
    A. A population with wide base and narrow apex
    B. An inverted pyramid
    C. A population pyramid with bulge in the middle
    D. A pyramid assuming a rectangular shape
47. What is the other name for secondary consumer?
    A. Carnivore B. Herbivore C. Producer D. Decomposer
48. Which one of the following terms best describes the number of different species in the biosphere or in a particular area?
    A. Species diversity B. Genetic diversity C. Ecosystem diversity D. Biodiversity
49. Which of the following statements best describes the role of bacteria in the nitrogen cycle? Bacteria turn:
    A. Oxygen into nitrogen for plants to use
    B. Carbon dioxide into oxygen during the process of photosynthesis
    C. Nitrogen into a useable form in a process called transpiration
    D. Nitrogen into a usable form for plant use called ammonia
50. Both photosynthesis and respiration are involved in:
    A. A. Nitrogen cycle B. Water cycle C. Carbon cycle D. Phosphorous cycle
51. Which of the following pairs of process add CO_2 to the atmosphere?
    A. Photosynthesis and fossilization C. Combustion and respiration
    B. Respiration and photosynthesis D. Decomposition and combustion
52. One of the following agricultural practices does not have a negative effect on biodiversity?
    A. Growing landraces C. Growing improved varieties
    B. Use of insecticides D. Use of pesticides
53. Occurrence of endemic species in Ethiopia is due to:
    A. continental separation
    B. the fact that these species have been extinct from other regions
    C. the fact that there is no terrestrial route to these places
    D. retrogressive evolution

54. Under ideal conditions and unlimited resources, continuous population growth pattern is known as:
    A. Density dependent growth C. Logistic growth
    B. Exponential growth D. Population distribution growth
55. The fact that Ethiopia is a regional center of biological diversity, which of the following diversity is expressed?
    A. High number of endemic wild and domestic plant species
    B. The many mountain, valleys, rivers and scenic beauty
    C. Wide range of altitude and climate
    D. The number of different biomes in the country
56. If you were to travel from the Arctic Circle to the Equator, what sequence of biomes would you most likely pass through?
    A. Tundra, temperate forest, taiga, tropical rain forest
    B. Taiga, tundra, temperate forest, tropical rain forest
    C. Tropical rain forest, ,temperate forest, taiga, tundra
    D. Tundra, taiga, temperate forest, tropical rain forest
57. What is the population growth phase of the current world population?
    A. Lag phase B. Exponential phase C. Decline phase D. Static phase
58. As an ecological succession passes from a lower to a higher seral stage, which of the following will not happen?
    A. The community gets more complex C. Soil nutrient is depleted
    B. Ecological niches increase D. Species gets more diverse
59. What is the biome of the world where succulent plants are commonly found?
    A. Thorn forests B. Hot deserts C. Deciduous forests D. Temperate grasslands
60. The following statements are correct regarding ecological succession except:
    A. Species diversity increase as succession proceeds
    B. The food chain relationship becomes more complex
    C. The role of decomposers becomes more and more important
    D. Ecological succession is a random process
61. If two heterozygous tall pea plants are crossed, how many of the offspring would be phenotypically tall plants?
    A. 0% B. 75% C. 50% D. 25%
62. One goat is heterozygous, long hair (Rr), and its mate carries homozygous short hair (rr). Which is the probability of the offspring having short hair?
    A. 25% B. 100% C. 50% D. 75%
63. Which of the following nucleotide sequences containing four pyrimidine bases?
    A. UAGCGGUAA B.GCUAGACAA C. GATCAATGC D. Both B and C
64. Which type of chromosome mutation causes the human genetic defect known as trisomy 16?
    A. Chromosome inversion B. Translocation C. Deletion D. Duplication
65. Which one of the following is commonly called the code of life?
    A. Cell B. Organelle C. DNA D. Nucleus
66. Which of the following chromosomal errors creates a cell with an extra chromosome?
    A. Duplication B. Inversion C. Deletion D. Non-disjunction
67. If two parents with genotypes ‘Aa’ are cross-bred and that there is no codominance in the inheritance pattern, what proportion of the offspring would have genotypes exactly like their parents?
    A. 100% B. 75% C. 25% D. 50%
68. How many nucleotides are needed to form codons for a protein that is 100 amino acids long?
    A. 100 nucleotides B. 200 nucleotides C. 640 nucleotides D. 300 nucleotides

69. If allowed to self-pollinate, which of the following pea genotype would produce progeny with 9:3:3:1 phenotypic ratio?
    A. RrYy B. RrYY C. RRYY D. RRYy
70. One of the following sources of evidence provides a more direct support to the process of Charles Darwin's theory of evolution.
    A. Physiology B. Genetics C. Anatomy D. Geographical distribution
71. If color blindness is sex linked and color-blind man marries the daughter of a color-blind person, which of the following is their progeny?
    A. None of her daughters are color-blind C. Half of her sons are color-blind
    B. All her sons are color-blind D. All her daughters are color-blind
72. If a radioactive substance that weights 5600 grams and has a half –life of 100 years is left with 700 grams, for how long has decaying activity been undergoing?
    A. 300 years B. 200 years C. 100 years D. 500 years
73. To which genus of primates are the Neanderthal humans classified?
    A. The genus *Homo* *C.* The genus *Australopithecus*
    B. The genus *Ardipithecus* *D.* The genus *Zinjanthropus*
74. Which of the following combinations is known as Neo-Darwinism?
    A. Natural selection and Mendelian law of inheritance
    B. Natural selection and acquired characteristics
    C. Acquired characteristics and Mendelian law of inheritance
    D. Natural selection and Lamarck's theory of evolution
75. In the process of allopatric speciation, which of the following is the mechanism that prevents populations from exchanging genes?
    A. Polyploidy B. Seasonal isolation . C. Geographic barrier D. Temporal isolation
76. Which of the following features do analogous structures mostly share?
    A. Phylogenetic similarity C. Ancestral similarity
    B. Functional similarity D. Developmental similarity
77. Lamarck's theory of evolution is known as:
    A. inheritance of acquired characters C. survival of the fittest
    B. natural selection D. mutation theory
78. The evolution of a species which is based upon the sum total adaptation changes could be preserved by:
    A. Isolation B. Speciation. C. Natural selection D. Natural conservation
79. Among the theories about the origin of life, which one better agrees with the concept of change in organisms and their genetic composition over generation being caused by meiosis, hybridization, natural selection and mutation?
    A. Biochemical origin C. Special creationism theory
    B. Cosmozoan theory D. Spontaneous generation theory
80. What is the possible cause or isolating mechanism for the formation of allopatric species?
    A. Seasonal isolation C. Geographical isolation
    B. Temporal isolation D. Behavioral isolation
81. Which of the following is the most accepted theory about the origin of life on earth?
    A. Theory of spontaneous evolution C. The cosmic theory
    B. Theory of chemical evolution D. Theory of special creation
82. Which of the following is the primary contribution of Darwin to biological theory?
    A. New alleles arise through mutation
    B. An important mechanism of biological evolution is natural selection
    C. Evolution is the change in gene frequencies over time
    D. Genes are the units of inheritance

83. Which of the following organic molecules is least informative about the evolutionary relationship between species?
    A. RNA B. Proteins C. Carbohydrates D. DNA
84. In most behavior,
    A. Hormones are requirements for a behavior pattern
    B. Sensory information has a critical part to play.
    C. Complex behavior sequence is entirely organized in the nervous system
    D. All of the above
85. The function of a behavior pattern is:
    A. Its selective advantage
    B. Its survival value
    C. The reason why individuals are thought to do better since they have it
    D. All of the above
86. In Pavlov's classical experiment, finally:
    A. The bell is the conditioned stimulus C. Both food and bell are the conditioned stimulus
    B. The food is the conditioned stimulus D. All of the above
87. With choosy females, males do their best to impress them:
    A. Since females of many species have good reasons about the male they choose
    B. Males attempt to mate with as many females as possible.
    C. By having most striking and elaborate displays
    D. All of the above
88. One point in behavior divergence not involving the genes is:
    A. Point mutation of genes C. Social learning
    B. Chromosomal mutation D. All of the above
89. Optimal forager is an animal that:
    A. Maximizes net food intake per unit-time C. Minimizes the food intake per unit time
    B. Maximizes the time to take food D. All of the above
90. Which of the following is not an example of courtship behavior:
    A. Releasing pheromones C. Fluffing feathers
    B. Taking over a perch D. Singing songs
91. Goosling follows a goose shortly after hatching, and from that point on considers that goose its parent. This is an example of:
    A. Reflex action B. Conditioning C. Regeneration D. Imprinting
92. In group living, individual animals:
    A. Must do roughly similar thing at the same time C. Must do different things at the same time
    B. Must do different things at different time D. All of the above
93. A better example of species specific behavior pattern is
    A. Displacement activities C. Innate releasing mechanism
    B. Courtship displays D. Coloration of the feathers
94. The meaning of message is:
    A. What is encoded in the signal C. The form of it is taking
    B. What the receiver makes of it D. All of the above
95. Movement directed toward light is called:
    A. Positive chemotaxis B. Positive phototaxis C. Negative geotaxis D. All of the above
96. An individual's fitness is:
    A. How far it can run per minute C. The number of progeny
    B. How likely it is to win a fight D. All of the above

97. Which of the following is true,
    A. Instinctive behaviors take a period of time to complete
    B. Instinctive behaviors happen instantly
    C. Animals are not born with instinctive behavior
    D. An instinctive behavior is the result of conscious thinking
98. What describes the way an organism interacts with other organisms?
    A. Behavior B. Imprinting C. Territoriality D. Reflex
99. Living in group helps to:
    A. Get enough food C. Find food
    B. Exploit the food systematically D. All of the above
100. A bird builds a nest when it is time for it to lay. This is an example of:
    A. Innate behavior B. Conditioning C. A reflex D. Learned behavior