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Biology, 2012 EC, natural science, entrance exam

Grade 12 · Biology · 2012 E.C.

Time allowed: 120 minutes **Questions:** 30 **Total marks:** 30

Name _____ Grade _____ ID No. _____ Date _____

1. Which of the following viruses is a RNA virus? (1)

A. Herpes simplex
B. H_(1)N_(1)
C. Bacteriophage
D. HIV

2. Which one of the following statements is true regarding the need for recycling nutrients through an ecosystem? (1)

A. It depletes the resources hence infinite resources become limited By process
B. It pollutes the environment hence waste products are accumulated During the process
C. It is energy consuming process hence nutrients are constantly Created and destroyed
D. It is the key to saving the earth hence nutrients become available

3. What is the impact of humans on the sulphur cycle? Production of (1)

A. Sulphur dioxide through combustion of fossil fuels
B. Sulphate through weathering and oxidation of rocks
C. Hydrogen sulphide through oxidation of sulphur
D. Sulphur through decomposition of dead matter

4. As succession progresses, the bare land turns out to be productive Due to the fact that the (1)

A. environment becomes less stable
B. abiotic conditions remain unchanged
C. species diversity and richness falls
D. amount and depth of the soil increases

5. What is the economic impact of AIDS? (1)

A. Enhance of life expectancy and GDP
B. Increase the resources of public expenditure
C. Seriously affects the taxable population
D. Encourage savings for medical treatment

6. A geographical area with specific climate, soil type, plants and animals with similar adaptation is (1)

A. habitat
B. ecosystem
C. niche
D. biome

7. As energy from the sun, enters the ecosystem in the form of light, one of the following happens to it. It (1)

A. goes on increasing along the tropic level from primary produces to decomposers
B. remains much of the time the same but increases as it reaches decomposers
C. goes on decreasing along the tropic level from primary producers to decomposers
D. depends on the type of tropic level and changes at each tropic level irregularly

8. Suppose a self fertilizing organism has AaBb genotype, how many different types of gametes would it produce if there is no linkage? (1)

A. 16
B. 8
C. 12
D. 4

9. What is the chemical composition of bacterial cell wall? (1)

A. starch
B. capsule
C. Cellulose
D. Peptidoglycan

10. In this biology section, a biology student applied a Gram stain two groups of bacteria named X and Y. At the end, he observed that the bacteria X stained purple while bacteria Y stained pink, which of the following could be the correct conclusion of his experiment? Bacteria (1)

A. X and Y are both Gram negative
B. Y are Gram positive and X are Gram negative
C. X are Gram positive and Y are Gram negative
D. Y and X are both Gram positive

11. As compared to infections diseases, functional diseases (1)

A. can spread through the bite of insects
B. are passed from person to person through reservoirs
C. are Caused by pathogenic microorganisms
D. can result from malfunction of organs

12. Which of the following products does NOT need the role of bacteria? (1)

A. Enzymes
B. Insulin
C. Ethanol
D. Vaccine

13. Bacteria are used in the production of vinegar to (1)

A. dilute ethanoic acid in to vinegar
B. produce alcohol in beer
C. supply oxygen for the fermenter
D. oxidise alcohol to ethanoic acid

14. Among the parts of the cell, which organelles are bounded with Double membrane? (1)

A. Vacoule, endoplasmic reticulum, and ribosome
B. Gogibody, chloroplast and lysosome
C. Lysosome, Vacoule and nucleus
D. Nucleus, mitochondria and chloroplast

15. Why are cells that secrete hormones and enzymes rich in rough endoplasmic reticulum? Because they produce more: (1)

A. Carbohydrates
B. Lipids
C. Proteins
D. ATP

16. What is the role of cholesterol in the cell membrane? (1)

A. maintain the membrane fluidity
B. anchor integral proteins with the membrane
C. serve as signals to other membrane of cells
D. make the membrane selectively permeable

17. If potato cells are immersed in a hypertonic solution, they will (1)

A. gain water and haemolysed
B. lose water and plasmolysed
C. gain water and become larger
D. lose water and become turgid

18. Which molecule of the plasma membrane contains carbohydrate Chains and allows identification of the cell by the immune system? (1)

A. Peripheral proteins
B. Integral proteins
C. Glyco proteins
D. Channel proteins

19. Red - green colour blindness is due to X-linked gene and determined By the recessive alleles. Which one of the following is true about this Condition? (1)

A. Expressed in both sexes equally if the parents arel carriers
B. Female inherit one sexes allele from each parent and become Affected
C. It affects males due alleles inherited from the father
D. It is much more common in females

20. Which one of the following statements is true about chromosome? It Is (1)

A. made up of DNA which is tightly coiled many times around histones
B. clearly visible in the nucleus when the cell is not dividing
C. divided in two equal sections by the centromere
D. Loosely organized throughout the nucleus when the cell is dividing

21. 24.Consider the following disordered events of transcription (1)

I. RNA polymerase crosses a stop sequence in the geme
II. RNA polymerase reads the antisense DNA strand and builds mRNA
Ill.mRNA molecule detaches from DNA and the DNA rejoin
IV.RNA polymerase binds to the promoter which signals the DNA To unwind

Which one is the correct sequence of events during transcription?

A. I → IV → III
B. IV → I → II → III
C. IV → II → I → III
D. I → IV → III → II

22. Which of the following bases are the triplets of codes in the mRNA That cease translation and the ribosome folds the polypeptide into its Final structure? (1)

A. UAA, UAG and UGA
B. TAA, TAG and TGA
C. ATT, ATCandACT
D. CCC, UUA and GUU

23. By which level of precipitation, temperature and type of plants is the Tagia biome characterized, respectively (1)

A. Almost none, cold and succulents
B. Adequate, cool year round and conifers
C. Humid, days warm, and ferns
D. Dry, cold and lichens

24. In which biome are epiphytes common? (1)

A. Tundra forest
B. Tropical rainforest
C. Temperature forest
D. Thorn forest

25. What makes Ethiopia rich in biodiversity which deserves a global attention? (1)

A. Uniformity of high lands and low lands
B. Similar terrestrial and aquatic biomes
C. Variation in topography and vegetation
D. Narrow range in altitude and climate

26. Why maintaining habitats is the key and fundamental aspect to conserve biodiversity? Because (1)

A. preserving habitats leads to decreased species richness and abundance

B. replacing natural habitats by artificial ones increases food security

C. disturbance of habitats makes the population well adapted

D. destruction of habitats is the leading cause of extinction

27. Among the following statements, which one is correct about mutations? Mutations (1)

A. are changes in genetic composition of population

B. that occur in sex cells are completely harmless

C. are accidents that occur spontaneously and randomly during DNA Replication

D. that occur in somatic cells can pass on to the next generation

28. If the particular triplet of bases in the sense strand of DNA is AGT, Then the corresponding codon for the transcribed mRNA will be (1)

A. UCA

B. AGU

C. ACU

D. UGA

29. What is the theory that states disease is caused by microogranisms? (1)

A. Endosymbiotic theory

B. Germ theory

C. Spontaneous generation

D. Biogenesis theory

30. In the bare bottom of a newly formed pond a biologist observed emergence of new algae. The form of succession he observed can be best described as (1)

A. secondary succession

B. primary succession

C. early succession

D. late succession

— END OF EXAMINATION —