Biodiversity, Classification & Evolution

1) Define the following terms; (17)
    a. Species
    b. Taxonomy
    c. Hierarchy
    d. Taxon
    e. Phylogeny
    f. Extinction
    g. Speciation
    h. Evolution
    i. Biodiversity
    j. Species richness
    k. Species diversity
    l. Conservation
    m. Adaptive radiation
    n. Convergent evolution
    o. Homologous
    p. Analogous
    q. Chordata
2) What is the binomial classification? (2)
3) What are the three domains? (3)
4) What are the 5 kingdoms and what are their differences? (5)
5) What are the 3 basic features of a taxonomic hierarchy? (3)
6) Name the different taxa in the hierarchical system from largest to smallest? (2)

7) What is a phylogenetic tree and what does it show? (2)

8) On a phylogenetic tree, explain why it is that the longer the time since the species diverged, the more different they are and therefore are less closely related? (2)

9) Give some features of the following phyla;

    a. Annelida (2)

    b. Arthropoda (2)

    c. Chordata (2)

10) What proportion of animals are vertebrates and invertebrates? (1)

11) What are the 4 classes of Arthropoda and what are their key characteristics? (4)

12) Which class makes up 75% of all animals? (1)

13) What are the 5 classes of Chordata (vertebrates)? (5)

14) How does the pentadactyl limb of Chordata provide evidence of common ancestry and evolution? (2)

15) Explain how the following methods can be used for classification; (9)

    a. DNA base sequencing

    b. mRNA base sequencing

    c. Amino acid sequencing

    d. Immunology

    e. Physical characteristics

    f. Physiology

    g. Anatomy/morphology

    h. Behaviour

    i. Breeding habits

16) What is genome sequencing and DNA hybridisation? (2)

17) Explain why mRNA base sequencing is preferable to DNA base sequencing for classification? (2)

18) How has modern day farming including monoculture affected biodiversity and why? (2)

19) Write the equation for Simpson's index of biodiversity? (2)

20) Calculate Simpson's index of biodiversity for the following; (3)

Species	Number
Daisy	55
Dandelion	65
Clover	35
Moss	85

21) What is the relationship between the number obtained from Simpson's Index of Biodiversity to the actual biodiversity? (1)

22) Explain why proteins such as cytochrome C, haemoglobin and fibrinogen are commonly used for genome and amino acid sequencing to help with classification of organisms? (2)

23) Where is cytochrome C found and why is it the best protein to use for sequencing and classification? (2)

24) What are the differences between continuous and discontinuous variation? (4)

25) What is a normal distribution curve and why do you get this with continuous variation? (1)

26) What are the characteristics of a normal distribution curve? (3)

27) What is standard deviation? (1)

28) Why is standard deviation a better measure of spread (dispersion) than the range? (1)

29) What is the standard deviation formula? (1)

30) Calculate standard deviation for the following heights in cm; (3)

58, 118, 102, 65, 65, 65, 78, 79, 84, 88, 88, 95, 90, 95, 102, 107, 108, 109, 92, 80.

Total: **/94**