

**Combined Miscellaneous 4**

- 1) What is the purpose of the hinge region in an antibody molecule? (2)
- 2) What is meant by the term opsonisation? (2)
- 3) A mother who is normal phenotypically has four children, two boys and two daughters. Both daughters and one of the sons are fine. The other son has a genetic condition known as Duchenne Muscular Dystrophy. The children's father is also normal. Suggest the most likely mode of inheritance and give reasons why? (3)
- 4) What is a bivalent? (2)
- 5) A particular herbicide functions as a non-competitive inhibitor of the enzyme Rubisco whereas another blocks the Electron Transport Chain. Suggest how they bring about their effects? (3)
- 6) Describe anaerobic respiration in yeast? (3)
- 7) How do changes in pH affect the oxyhaemoglobin curve? (2)
- 8) What is the function of myoglobin? Suggest whether its curve lies to the left or right of that of oxyhaemoglobin and give reasons why? (3)
- 9) What are the differences between continuous and discontinuous variation? (4)
- 10) Explain how each of the following can be used in ecology;
  - a. Frame quadrat (2)
  - b. Line Transect (2)
  - c. Belt transect (2)
- 11) Draw the structure and give the function of a tRNA molecule? (3)
- 12) What is rigor mortis and why does it happen? (3)
- 13) Explain the role of the phosphocreatinine system? (3)
- 14) Describe the process of oxidative phosphorylation? (5)
- 15) Water has a high specific heat capacity. Why is this important? (2)
- 16) Embryonic stem cells may be more useful than adult stem cells. Why? (2)

- 17) What is meant by the tertiary structure of a protein? (2)
- 18) Using a diagram, draw and explain the structure and adaptations of the chloroplasts? (4)
- 19) What are the differences between cellulose and collagen? (3)
- 20) Explain how urine is formed? (6)
- 21) Give 2 examples of biotic factors? (2)
- 22) How does a new species form? (3)
- 23) What is a null hypothesis? (2)
- 24) Describe the role of proto-oncogenes and tumour suppressor genes? (2)
- 25) What is PCR and why is it important? (2)
- 26) Describe the sliding filament theory of how skeletal muscles contract? (6)
- 27) Draw two sarcomeres; one contracted and one relaxed and explain the differences between them? (4)
- 28) Describe the role of micro-organisms in biology? (6)
- 29) Compare differences between DNA and RNA? (3)
- 30) Describe the process of transcription? (4)
- 31) What is the role of a restriction endonuclease and what is a restriction site? (2)
- 32) Describe the structure and functions of the phospholipid bilayer? (4)
- 33) What is the site of respiration in bacteria? (1)
- 34) What are the differences between prokaryotes and eukaryotes? (4)

Total: / **107**