

**A2 Miscellaneous 5**

- 1) Describe how gel electrophoresis can separate DNA? (3)
- 2) How does gene therapy work? (4)
- 3) Why does the DNA polymerase in PCR not denature at such high temperatures? (2)
- 4) Explain how different parts of the loop of Henle are structurally different? (3)
- 5) Caffeine acts as a stimulant at synapses. How does it bring about its effects? (3)
- 6) Explain how hyperpolarisation is created in neurones and why it is necessary? (2)
- 7) Describe the light dependent reaction of photosynthesis? (8)
- 8) Explain the role of pseudomonas in the nitrogen cycle? (2)
- 9) How does dialysis work? (4)
- 10) Why is ATP the universal energy currency? (4)
- 11) What evidence is there for chemiosmosis in aerobic respiration? (3)
- 12) Explain how genetic engineering is carried out? (4)
- 13) What is the purpose of DNA sequencing? (2)
- 14) Differentiate between epistasis and epigenetics? (2)
- 15) Why are X-linked dominant conditions present in equal proportion in both genders? (2)
- 16) The coat colour of a tiger can either be white (W) or coloured (w). If it is coloured, it can either be yellow (Y) or brown (y). If two tigers which are both heterozygous for both genes are crossed, work out the ratio of the phenotypes in the F2 generation? Show your working and include a genetic diagram. (6)
- 17) Explain how 32 ATP are generated from aerobic respiration per glucose molecule? (4)
- 18) Distinguish between the 3 main mechanisms of ATP formation? (6)
- 19) What are the different stages at which ATP is consumed in skeletal muscle contraction? (3)
- 20) Draw the structure of a relaxed and contracted sarcomere. (4)
- 21) What are the differences between;
  - a. Rods and cones (4)

b.  $P_{FR}$  and  $P_R$  (2)

22) Describe the process of primary succession? (4)

**Total: /81**