	Biology Paper 2 Tick List			
B5 Homeostasis and Response				
	The human nervous system			
1.	Define homeostasis and identify control of blood glucose, body temperature and water/ ion balance as homeostatic processes			
2.	Describe the structure of the human nervous system and explain its adaptations to enable fast and complex connectivity			
3.	Identify and label a sensory and a motor neurone			
4.	Explain synaptic information transfer			
5.	Describe a reflex arc pathway and explain why it enables a faster reaction time			
	Hormonal co-ordination			
6.	Define endocrine system, hormone and gland and describe the differences between hormonal control and control by the nervous system			
7.	Describe the overall specific effects of insulin, adrenaline, ADH, FSH and TSH			
8.	Identify and describe the main hormones produced by the pituitary gland, thyroid, pancreas, adrenal glands, ovaries and testes			
9.	Describe and explain the mechanism by which insulin is used to lower blood glucose concentration			
10.	**Describe and explain the mechanism by which glucagon is used to convert glycogen into glucose**			
11.	Describe the cause and effect of type 1 and type 2 diabetes			
12.	Describe the common treatment options to control type 1 diabetes including the future possibility of stem cell research providing an eventual cure			
13.	Describe the options to control type 2 diabetes without insulin			
14.	**Describe the role of thyroxine in controlling basal metabolic rate**			
15.	**Describe the role of adrenaline in preparing the body to respond to fear or stress**			
16.	**Describe and explain a negative feedback mechanism**			
17.	Label the parts of the male and female reproductive system			
18.	Describe the changes that occur during puberty in males and females in response to testosterone and oestrogen			
19.	Describe key events that occur in the female menstrual cycle, including overall functions of the hormones FSH, LH, oestrogen and progesterone			
20.	**Link menstrual cycle events with action of LH, FSH, oestrogen and progesterone and describe the interactions between them**			
21.	Describe the action of the following contraceptive methods: oral contraceptives, hormonal injections, implants and patches, condoms, diaphragms, intrauterine devices, spermicides, abstinence and surgical sterilisation			
22.	**Describe the use of FSH and LH in the treatment of infertility**			
23.	**Describe and explain the stages involved in the process of IVF and evaluate the physical and emotional side effects of undergoing IVF treatment**			
B6 Inheritance, Variation and Evolution				
24.	Define asexual reproduction; including that only mitosis is involved			
25.	Define sexual reproduction; including that meiosis is involved in the production of gametes			
26.	Describe the significance of sexual reproduction in leading to genetic variation			
27.	Describe the significance of sexual reproduction in enabling natural selection			
28.	Describe the process of meiosis to produce haploid gametes			

29.	Describe the fertilisation process to produce a diploid fertilised cell and then the mitotic division to form the embryo			
30.	Describe the organisation of DNA into chromosomes			
31.	Describe and explain why the sequencing of the human genome provides opportunity for scientific research			
32.	Define the terms: allele, homozygote, heterozygote, genotype, phenotype, dominant and recessive			
33.	Interpret Punnett square diagrams and family trees to predict and understand inheritance and the outcome of a genetic cross			
34.	**Construct Punnet square diagrams for a genetic cross**			
35.	Describe the determination of gender in humans according to the sex chromosomes			
36.	Describe and explain how polydactyly is inherited from a dominant allele			
37.	Describe and explain how cystic fibrosis is inherited from a recessive allele			
38.	Consider the difficulties scientists face in trying to find a cure for genetic disorders			
39.	Describe how genetic fingerprinting can be used to screen for particular alleles in adults, embryos and foetal cells			
40.	Evaluate the economic, social and ethical issues related to screening embryos and foetal cells for genetic disorders			
41.	Explain that variation results from genetic, environmental and combined factors			
42.	Describe the process of natural selection, including that genetic variation arises from mutation			
43.	Describe simply how natural selection occurring in separate populations of the same species can lead to the formation of new species			
44.	Describe the process of selective breeding and why the lack of variation due to selective breeding can give rise to problems			
45.	Describe the process of genetic engineering			
46.	**Describe and explain the use of enzymes and vectors in genetic engineering**			
47.	Describe the use of genetic engineering to produce GM food			
48.	Evaluate the benefits, risks and ethical objections to genetic engineering in agriculture and medicine			
49.	Describe the system of classification by Linnaeus into kingdom, phylum, class, order, family, genus and species			
50.	Discuss the way that technology has enabled the classification of organisms into three domains (archaea, bacteria and eukaryotes) and six kingdoms			
	Evolution			
51.	Describe the process of fossil formation			
52.	Explain how fossils provide evidence for evolution of organisms			
53.	Describe how extinction can occur due to environmental or geological changes, or catastrophic events			
54.	Describe the part played by mutation in the development of antibiotic-resistant bacteria such as MRSA			
55.	Discuss the ways that the development of antibiotic resistant strains of bacteria can be minimised and also what can be done to find and develop new antibiotics			
B7 Ecology	**Adaptations, interdependence and competition**			
56.	Define the terms biotic, abiotic, ecosystem, habitat, environment and community			
57.	Describe and explain the interdependence of plants and animals in a stable			

	community			
58.	Describe the abiotic and biotic factors that may affect communities of organisms			
59.	Describe the use of quadrats to estimate populations, and transects to measure the distribution of organisms			
60.	Describe the factors that animals and plants compete for in a habitat			
61.	Describe the ways that animals and plants may be adapted to their habitat			
62.	Define extremophile and describe some of the ways that extremophiles may be adapted to cope with temperature, pressure or salt			
Ecosystems				
63.	Construct and interpret food chains and food webs			
64.	Describe and explain the ways in which predators, prey and food availability are interrelated in a habitat			
65.	Describe and explain the carbon cycle			
66.	Describe and explain the water cycle			
67.	Explain the significance of decomposition in the recycling of material in the environment			
Biodiversity				
68.	Define biodiversity and explain why high biodiversity is important			
69.	Describe and explain the fact of human population growth and the pressures this is putting on the Earth's environment and resources			
70.	Describe the ways in which humans pollute land and water and specifically, the formation and action of acid rain, smog and smoke pollution			
71.	Describe the action of deforestation and destruction of peat bogs and the associated environmental impact			
72.	Explain the greenhouse effect and how it is linked with raised carbon dioxide levels			
73.	Describe and explain the biological consequences of global warming			
74.	**Explain how seasonal, geographic or human factors can cause environmental changes**			
75.	Discuss some of the programmes that people have put in place to reduce the impact of human activity on biodiversity and maintain it.			