

Biology facts to learn for GCSE Topics 2 to 5.

Remember Paper 1 will have questions on topics 1,2,3,4,5. Get someone to ask you these questions until you get all the answers right. **Questions in bold are for the Higher Paper only.**

Topic 2 (Paper 1 only)

Q	Topic 2 Questions	Q	Topic 2 Answers
1	What happens at interphase in the cell cycle when the cell is about to divide?	1	DNA replicates/copies itself
2	Name the stages of mitosis in the order that they occur between interphase and cytokinesis	2	Prophase, metaphase, anaphase, telophase
3	Give three reasons why cells divide by mitosis	3	Growth, repair, asexual reproduction
4	Describe the daughter cells produced by mitosis	4	2 cells that are genetically identical to the parent cell
5	What disease is caused by uncontrolled cell division?	5	cancer
6	What is the term used for when unspecialised cells turn into specialised cells?	6	Differentiate/differentiation
7	What does elongation of plant cells mean?	7	Get longer
8	In what tissue do you find plant stem cells?	8	meristem
9	What detects a stimulus in the nervous system?	9	A receptor
10	What is the name of the first neurone that an impulse travels along?	10	sensory
11	What are the neurones in the central nervous system called?	11	relay
12	What is the gap between two neurones called?	12	synapse
13	Name the chemicals that diffuse across the synapse?	13	neurotransmitters
14	What happens in the next neurone when neurotransmitters diffuse across the synapse?	14	A new impulse is sent
15	Which neurone comes after the relay neurone?	15	Motor neurone
16	Name the two types of effector	16	Muscles and glands
17	Name the neuron that has a dendron and an axon.	17	Sensory
18	What is the difference between a dendron and an axon?	18	Dendron takes an impulse towards the cell body, axon takes an impulse away from the cell body
19	What is the role of the myelin sheath?	19	Insulate the neurone and speed up nerve impulses
20	What is the purpose of a reflex action?	20	To protect the body from harm

Topic 3 (Paper 1 only)

Q	Topic 3 Questions		Topic 3 answers
1	Name the cells produced by meiosis	1	Gametes (sperm and egg)
2	Describe the daughter cells produced by meiosis	2	4 haploid genetically different daughter cells
3	What are the building blocks of DNA called?	3	Nucleotides
4	What does one nucleotide consist of?	4	A phosphate, a sugar and a base
5	What holds together the two strands of DNA?	5	Hydrogen bonds
6	What do the hydrogen bonds form between?	6	Complementary base pairs
7	Name the four bases in DNA?	7	Adenine, guanine, cytosine, thymine
8	What is the name of the coiled shape of DNA?	8	A double helix
9	What is the entire DNA of an organism called?	9	Genome
10	What does a gene do?	10	Codes for a specific protein
11	Why is detergent needed to extract DNA from fruit?	11	To break down cell membranes
12	Why is ethanol needed to extract DNA from fruit?	12	To precipitate the DNA
13	Define allele	13	Version of a gene
14	Define phenotype	14	Characteristics of an organism
15	Define genotype	15	Alleles possessed by an organism
16	Define homozygous	16	2 alleles the same for a gene
17	Define heterozygous	17	2 alleles different for a gene
18	Define dominant allele	18	Individual needs only one to be expressed in the phenotype
19	Define recessive allele	19	Individual must have two copies to be expressed in the phenotype
20	What is a zygote?	20	A fertilised egg cell
21	Which two sex chromosomes does a male have?	21	XY
22	Which two sex chromosomes does a female have?	22	XX
23	What are the two main causes of variation?	23	Genetic (mutation) and environmental causes
24	What was the aim of the human genome project	24	To identify all the genes in the human genome
25	What is a mutation?	25	A change in a gene (to form a new allele)

Topic 4 (Paper 1 only)

Q	Topic 4 Questions		Topic 4 Answers
1	What is Darwin's theory of evolution?	1	Natural selection
2	What are the key ideas of natural selection?	2	Organisms show genetic variation due to random mutation Best adapted survive and reproduce Best adapted pass on beneficial alleles to offspring
3	What is meant by antibiotic resistant bacteria?	3	Bacteria that are not killed by antibiotics
4	How old is the fossil of Ardi?	4	4.4 million years old
5	How old is the fossil Lucy?	5	3.2 million years old
6	Name the family that discovered fossils from about 1.5 million years ago.	6	The Leakey family
7	Why do stone tools give evidence for evolution of humans?	7	More recent tools are more complex
8	Name the three domains?	8	Archae, bacteria and eukaryotes
9	What process has been used to produce most of our farm animals and crops?	9	Selective breeding
10	What is genetic engineering?	10	Transferring genes to an organism to give a desirable characteristic
11	What do restriction enzymes do?	11	Cut DNA
12	What does ligase enzyme do?	12	Joins two pieces of DNA
13	What are sticky ends?	13	Ends of DNA that will form complementary base pairs
14	What do vectors do?	14	Carry DNA (from one organism to another)

Topic 5 (Paper 1 only)

Q	Topic 5 Questions		Topic 5 Answers
1	Define the term 'health' (as defined by the World Health Organisation)	1	A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity
2	Define a communicable disease	2	A disease caused by a pathogen that can be passed from person to person
3	What is a pathogen?	3	A disease causing organism
4	Name four types of pathogen	4	Bacteria, viruses, fungi, protists
5	What type of pathogen causes diarrhoea in the disease cholera?	5	Bacteria
6	How are cholera bacteria transmitted	6	In water
7	What organs are damaged by the bacteria that cause Tuberculosis (TB)	7	Lungs
8	How are TB bacteria transmitted?	8	In air
9	What type of pathogen causes Chalara Ash dieback disease in Ash trees?	9	Fungi
10	How are Chalara ash dieback fungi transmitted?	10	In the air (as spores)

11	What type of pathogen causes damage to blood and liver in malaria?	11	Protist
12	How are malaria protists transmitted?	12	In animal vectors (mosquitos)
13	HIV leads to AIDS by destroying what type of cells?	13	White blood cells
14	How is HIV transmitted?	14	Sexually or blood contamination
15	Name the bacteria that cause stomach ulcers	15	Helicobacter
16	How are <i>Helicobacter</i> bacteria transmitted that cause stomach ulcers?	16	Oral transmission (food)
17	What type of pathogen is Ebola that causes haemorrhagic fever?	17	Virus
18	How is Ebola virus transmitted?	18	By body fluids
19	What type of pathogen cause Chlamydia?	19	bacteria
20	How are Chlamydia bacteria transmitted?	20	Sexually
21	How can the spread of Chlamydia bacteria and the HIV virus be prevented?	21	Barrier contraception (condoms)
22	Name three physical barriers that provide protection from pathogens	22	Skin, cilia, mucus
23	Name two chemical defences that provide protection from pathogens	23	Lysozyme and hydrochloric acid
24	What is found on the surface of pathogens that triggers an immune response?	24	Antigens
25	What do lymphocytes (white blood cells) produce when they are stimulated by antigens?	25	Antibodies
26	Why do pathogens not make you ill in the secondary response?	26	You have memory lymphocytes that produce antibodies quickly to destroy pathogens before they make you ill.
27	What is present in a vaccine?	27	An inactive form of the pathogen
28	What do antibiotics do?	28	Kill bacteria
29	What stages are involved in producing a new medicine?	29	Discovery, development, testing on animals or cells and tissues, testing on healthy humans, testing on patients.
30	Define a non-communicable disease	30	A disease not caused by a pathogen.
31	Name three types of non-communicable disease	31	Cardiovascular disease (heart disease), cancer, liver disease
32	How do you calculate BMI (Body Mass Index)?	32	Mass (in kilograms) divided by the height squared (in metres)
33	What does a BMI over 30 mean?	33	Obese
34	What main organ does excessive alcohol intake affect?	34	Liver
35	What two diseases are linked to smoking?	35	Lung cancer and cardiovascular disease
36	Name three ways to treat cardiovascular disease.	36	Lifelong Medication, surgery, lifestyle changes.