

Transition Pack for A Level Biology

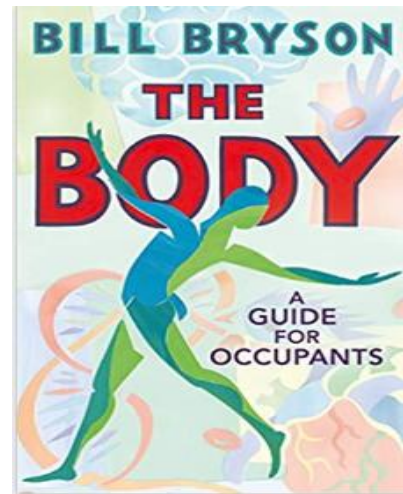
Get ready for A-level!

**A guide to help you get ready for A-level
Biology**



Reading

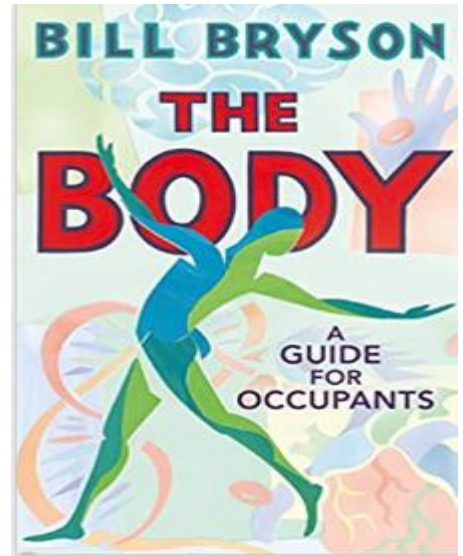
Read the book and answer the questions below. Each question relates to a chapter in the book (borrow from library or get a second hand copy from Amazon for £1)



1. According to the RSC, using Benedict Cumberbatch as a template, how much would it cost to build a human?
2. In 2007, how many species of bacteria were found in the belly buttons of 60 Americans, and how many of these species were unknown to Science?
3. Where is all today's penicillin originally derived from and who found this?
4. In 1956, how many US states was it illegal for epileptics to marry?
5. What are you seeing, when you sometimes see white flashes when looking at a blue sky?
6. When blowing out a candle on a cake, how much is the coverage of bacteria increased by?
7. Where did H. P. Frey collect his soil sample and what did it contain?
8. What did Jeffrey Friedman find and where is it made?
9. How much thicker is the bicep in the serving arm of a tennis player?
10. According to one calculation, how much must you walk or jog to lose 1lb in weight?
11. How heavy would a human be if scaled up to 100ft? How much heavier is this?
12. What did Peter Medewar observe in the Summer of 1940?

Reading

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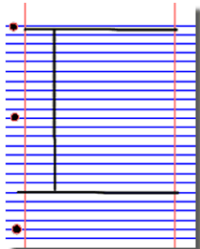


13. How long did Charles Osbourne hiccup for and how did they start? How many times did he hiccup?
14. How many spoons of sugar is 150g of rice equivalent to?
15. What did Wheeler Bryson Lipes say to Dean Rector before he carried out surgery?
16. What is alarming about a dozen long-haul flight pilots?
17. How many genes does the Y chromosome have and how long has it been shrinking?
18. How many eggs will a 20 week old foetus have inside her? What will this number be at birth?
19. Who coined the term synapse & what sport teams was he a member of?
20. What does Bill Bryson say makes a successful virus?
21. What percentage of cancer diagnosis a ear account for those 19 or under? Of these what percentage are leukaemia?
22. What is the life expectancy of men in East Glasgow? And where is this 9 years less than?
23. What does the liver continue to do after death?

Research activities – (Complete for one)

Research, reading and note making are essential skills for A level Biology study. For the following articles you are going to produce 'Cornell Notes' to summarise your reading.

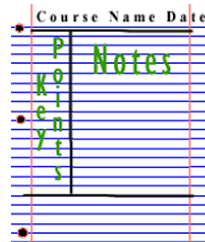
1. Divide your page into three sections like this



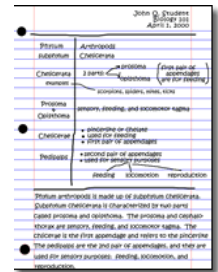
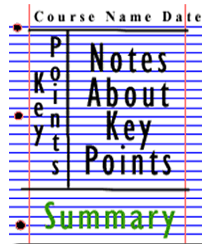
2. Write the name, date and topic at the top of the page



3. Use the large box to make notes. Leave a space between separate idea. Abbreviate where possible.



4. Review and identify the key points in the left hand box



5. Write a summary of the main ideas in the bottom space

Topic 1: The Cell

Available at:

<https://www.stem.org.uk/resources/elibrary/resource/460337/inside-cell#&gid=undefined&pid=1>

The cell is the building block of life. Each of us starts from a single cell, a zygote, and grows into a complex organism made of trillions of cells. In this issue, we explore what we know – and what we don't yet know – about the cells that are the basis of us all and how they reproduce, grow, move, communicate and die.

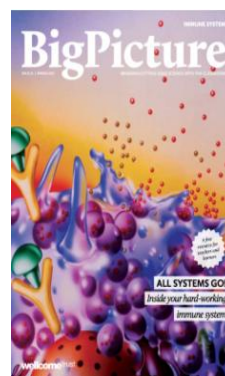


Topic 2: The Immune System

Available at:

<https://www.stem.org.uk/resources/elibrary/resource/35694/immune-system#&gid=undefined&pid=8>

The immune system is what keeps us healthy in spite of the many organisms and substances that can do us harm. In this issue, explore how our bodies are designed to prevent potentially harmful objects from getting inside, and what happens when bacteria, viruses, fungi or other foreign organisms or substances breach these barriers.



Movie Recommendations (Optional)

If you have 30 minutes to spare, here are some great presentations (and free!) from world leading scientists and researchers on a variety of topics. They provide some interesting answers and ask some thought-provoking questions. Use the link or scan the QR code to view:

A New Superweapon in the Fight Against Cancer

Available at :

http://www.ted.com/talks/paula_hammond_a_new_superweapon_in_the_fight_against_cancer?language=en

Cancer is a very clever, adaptable disease. To defeat it, says medical researcher and educator Paula Hammond, we need a new and powerful mode of attack.



Why Bees are Disappearing

Available at :

http://www.ted.com/talks/marla_spivak_why_bees_are_disappearing?language=en

Honeybees have thrived for 50 million years, each colony 40 to 50,000 individuals coordinated in amazing harmony. So why, seven years ago, did colonies start dying en-masse?

Why Doctors Don't Know About the Drugs They Prescribe

Available at :

http://www.ted.com/talks/ben_goldacre_what_doctors_don_t_know_about_the_drugs_they_prescribe?language=en

When a new drug gets tested, the results of the trials should be published for the rest of the medical world — except much of the time, negative or inconclusive findings go unreported, leaving doctors and researchers in the dark.



Growing New Organs

Available at :

http://www.ted.com/talks/anthony_atalla_growing_organs_engineering_tissue?language=en

Anthony Atalla's state-of-the-art lab grows human organs — from muscles to blood vessels to bladders, and more.

Science on Social Media (Suggested)

Science communication is essential in the modern world and all the big scientific companies, researchers and institutions have their own social media accounts. Here are some of our top tips to keep up to date with developing news or interesting stories:

Follow on X:

Commander Chris Hadfield – former resident aboard the International Space Station @cmdrhadfield

Tiktaalik roseae – a 375 million year old fossil fish with its own Twitter account!
@tiktaalikroseae

NASA's Voyager 2 – a satellite launched nearly 40 years ago that is now travelling beyond our Solar System
@NSFVoyager2

Neil dGrasse Tyson – Director of the Hayden Planetarium in New York
@neiltyson

Sci Curious – feed from writer and Bethany Brookshire tweeting about good, bad and weird neuroscience
@scicurious

The SETI Institute – The Search for Extra Terrestrial Intelligence, be the first to know what they find!
@setiinstitute

Carl Zimmer – Science writer Carl blogs about the life sciences
@carlzimmer

Phil Plait – tweets about astronomy and bad science
@badastronomer

Virginia Hughes – science journalist and blogger for National Geographic, keep up to date with neuroscience, genetics and behaviour
@virginiahughes

Maryn McKenna – science journalist who writes about antibiotic resistance
@marynmck

Find on Facebook:

Nature - the profile page for nature.com for news, features, research and events from Nature Publishing Group

Marin Conservation Institute – publishes the latest science to identify important marine ecosystems around the world.

National Geographic - since 1888, National Geographic has travelled the Earth, sharing its amazing stories in pictures and words.

Science News Magazine - Science covers important and emerging research in all fields of science.

BBC Science News - The latest BBC Science and Environment News: breaking news, analysis and debate on science and nature around the world.



Answer the Questions



The following 40 minute test is designed to test your recall, analysis and evaluative skills and knowledge. Remember to use your exam technique: look at the command words and the number of marks each question is worth. A suggested mark scheme is provided for you to check your answers.

1. a) What are the four base pairs found in DNA?

..... (2)

b) What does DNA code for?

..... (1)

c) Which organelle in a cell carries out this function?

..... (1)

2. a) What theory did Charles Darwin propose?

..... (1)

b) Why did many people not believe Darwin at the time?

..... (1)

c) Describe how fossils are formed.

.....
.....
..... (3)

d) The fossil record shows us that there have been some species that have formed and some that have become extinct.

i) What is meant by the term 'species'?

..... (2)

ii) Describe how a new species may arise:

.....
.....
..... (3)

3. Ecologists regularly study habitats to measure the species present and the effect of any changes. One team of ecologists investigated the habitat shown in the picture below:

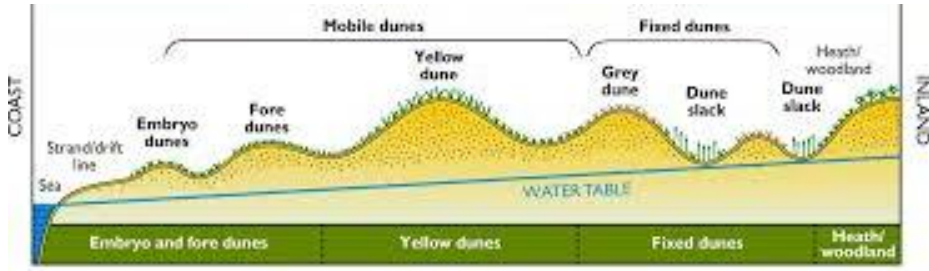


Image taken from <http://www.macaulay.ac.uk/soilquality/Dune%20Succession.pdf>

a) Define the following keywords:

i) Population

.....

ii) Community

.....

(2)

b) Give an example of one biotic factor and one abiotic factor that would be present in this habitat

Biotic:

Abiotic:

(2)

c) Describe how the ecologists would go about measuring the species present between the coast and the inland.

.....

(6)

4. Every living organism is made of cells.

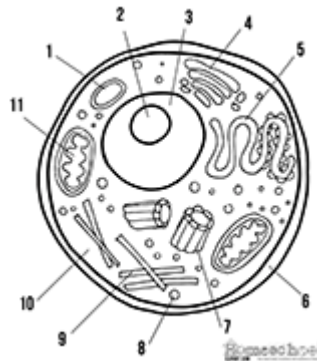


Image taken from <http://prestigebox.com/worksheet/label-an-animal-cell-worksheet>

a) Label the following parts of the animal cell:

2

5

8

(3)

b) Describe how is the structure of the cell membrane related to its function?

.....

(3)

5. A medical research team investigated how quickly the body deals with glucose after a meal. They studied the blood glucose concentration of people who exercised versus those who did not. Here are their results:

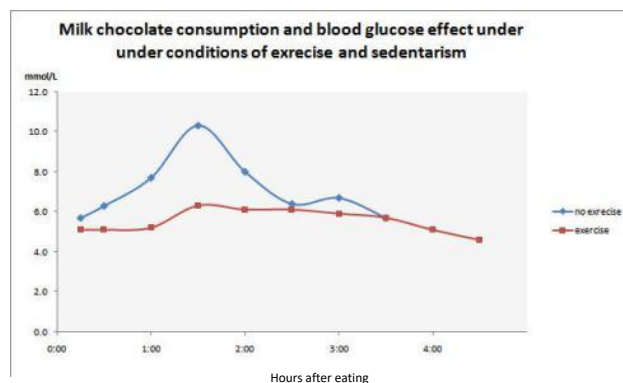


Image taken from <https://memoirsofanamnesic.wordpress.com/category/blood-glucose/>

a) What organ in the body regulates blood glucose concentration?

.....

(1)

b) Explain how the stages that would bring about a return to normal blood glucose concentrations.

.....

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.....

(4)

c) Name one variable the researchers will have controlled.

.....

(1)

d) The researchers made the following conclusion:

“Blood glucose returns to normal values for all people after 4 hours”

To what extent do you agree with this conclusion.

.....

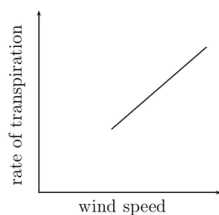
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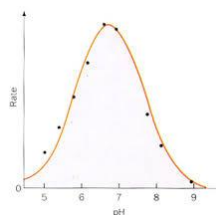
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(3)

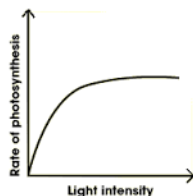
6. Scientists need to be able to interpret data in graphs to decide if there are trends in the results. For each graph bellow, describe the trend.



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(4)