



Monday 2 June 2014 – Afternoon

AS GCE HUMAN BIOLOGY

F222/01/ADVANCE NOTICE Growth, Development and Disease

For issue on or after:
13 MARCH 2014

Duration: 1 hour 45 minutes



INSTRUCTIONS TO EXAMINATION OFFICER/INVIGILATOR

Do not send this Insert for marking; it should be retained in the centre or destroyed.

NOTES FOR GUIDANCE (CANDIDATES)

- 1** This Advance Notice contains two case studies, which are needed in preparation for questions 1 and 2 in the externally assessed examination **F222/01**.
- 2** You will need to read the case studies carefully and also have covered the learning outcomes for Unit F222/01 (Growth, Development and Disease). The examination paper will contain questions on the two case studies. You will be expected to apply your knowledge and understanding of the work covered in F222/01 to answer these questions. There are 100 marks available on the paper.
- 3** You can seek advice from your teacher about the content of the case studies and you can discuss them with others in your class. You may also investigate the topics yourself using any resources available to you.
- 4** You will **not** be able to take your copy of the case studies, or other materials, into the examination. The examination paper will contain fresh copies of the two case studies as an insert.
- 5** You will not have time to read the case studies for the first time in the examination if you are to complete the examination paper within the specified time. However, you should refer to the case studies when answering the questions.

This document consists of **8** pages. Any blank pages are indicated.

Case Study 1

TB: STILL HITTING THE HEADLINES

Tuberculosis (TB) causes the deaths of several million people every year. World TB Day, on the 24th March, is designed to increase public awareness of the disease. It commemorates the day in 1882 when Robert Koch, a German scientist, astounded the scientific community by announcing that he had discovered the cause of TB. At the time of Koch's announcement, TB was raging throughout Europe and the Americas, killing one in seven people. Koch's discovery led to diagnostic tests for the disease. Eventually, both a vaccine and treatments were developed, yet TB is still hitting the headlines almost 150 years later, as shown below:

DRUG-RESISTANT TB A MAJOR THREAT

Fears are growing that drug-resistant tuberculosis bacteria could spread across the globe. A leading expert from the World Health Organisation expressed her concern and these new multidrug-resistant strains are responsible for 500,000 new cases of TB each year. Dr. Compton insis

Heaf test to be replaced

The government announced yesterday that the current test for tuberculosis, the Heaf test, would be replaced by a new test. The minist plan to introduce the new test in the first half of next year," he said

TB Today: A Report

98% of deaths from tuberculosis are of people living in deprived communities in the developing world. The disease has been rife in some populations for several generations. About one third of people with not benefit from

CONCERN OVER TB VACCINE

Figures released today indicate that the BCG vaccine for tuberculosis is 80% effective at best. The vaccine which protects ag-

The BCG vaccine against TB was produced by the Pasteur Institute in the early twentieth century. Since then, this Institute has been at the forefront of research into pathogens. For example, TB also claims the lives of many people infected with a pathogen called Human Immunodeficiency Virus (HIV). HIV was discovered by a research team at the Pasteur Institute in 1983. More than thirty years later, however, a vaccine for HIV has yet to be developed.

TB and HIV cause millions of deaths every year. TB has been around for millennia, and HIV for decades, yet both are still hitting the headlines.

PLEASE SEE PAGE 5 FOR REFERENCES

Case Study 2

SOWING THE SEEDS OF HEALTH

Jamie, a student studying Human Biology, is having a conversation about the course with his teacher, Mr Rose.

Jamie:	'Sorry Sir, but I don't get why we study plants. I mean, come on, what does that have to do with Human Biology?'
Mr Rose:	'Where do I start Jamie? There's food production for one thing. You should know all about that from GCSE.'
Jamie:	'Yeah ok, my dad grows fruit and veg, and I know about the photosynthesis stuff from GCSE, but I thought we'd left that behind. I chose <i>Human Biology</i> to study <i>humans!</i> '
Mr Rose:	'That's exactly what we're doing. Plants are essential to every aspect of our lives.'
Jamie:	'Well, my mum likes visiting Kew Gardens, does that count?'
Mr Rose:	'Um, yes... but there's so much more. Think about it. For starters, the fruit and veg your dad grows are a really important source of the nutrients we need for a healthy diet. And actually, your mum's visits to the botanical gardens at Kew are really interesting...'
Jamie:	'Trust me, they're not.'
Mr Rose:	'Did you know some botanical gardens like Kew store seeds belonging to plants that no longer exist in the wild? They're even given a "barcode" based on their DNA.'
Jamie:	'Ok... so? Why put so much effort into saving plants?'
Mr Rose:	'You'd be amazed how many useful products come from plants. And there are likely to be lots we haven't discovered yet as well. Let me give you an example. Hmmm, have you ever taken an aspirin for a headache?'
Jamie:	'Of course, but...'
Mr Rose:	'Well, aspirin comes from plants.'
Jamie:	'Oh, really?'
Mr Rose:	'Yes, the chemical it's based on is found in willow trees. And aspirin isn't just for headaches. Doctors can use it for treating other conditions. In fact, many other plants have medicinal properties as well.'
Jamie:	'Oh yeah, I know, there was Fleming and his fungi... didn't he discover penicillin?'

PLEASE SEE PAGE 5 FOR REFERENCES

Mr Rose:	‘Yes, well remembered Jamie, but fungi aren’t plants. However, some plants do produce chemicals that act like penicillin. It’s really interesting that some of these plants were first used by indigenous people in South America hundreds of years ago to treat a whole list of illnesses. They may have chewed or eaten the leaves directly, or ground the seeds into pastes and ointments for rubbing into their skin. We even do this today.’
Jamie:	‘Sir, you know what, that’s actually pretty interesting, but I wouldn’t want to try it. How do we know what’s safe to swallow or put on our skin? I mean, don’t we have to test stuff first?’
Mr Rose:	‘Yes, good point. We do have organisations now that make sure tests are carried out on products before people use them.’
Jamie:	‘Ah, Sir, I’ve thought of something else: tobacco in cigarettes. My mum gets bad asthma because she smokes. And tobacco’s from a plant, isn’t it?’
Mr Rose:	‘Yes, you’re right, another plant. That’s yet another reason for us to study plants: their damaging effects on humans. Now, have you finished the interrogation? I think it’s time for you to go and look up all this stuff on plants!’
Jamie:	‘Point taken. See you later Sir.’

PLEASE SEE PAGE 5 FOR REFERENCES

References:**Case Study 1****TB: STILL HITTING THE HEADLINES**

1. Information about the 2013 World TB Day

http://www.stoptb.org/events/world_tb_day/2013/

2. Disease information about TB

<http://www.nhs.uk/conditions/tuberculosis/Pages/Introduction.aspx>

3. Information about HIV

<http://www.nhs.uk/conditions/HIV/Pages/Introduction.aspx>

4. The Pasteur Institute

<http://www.pasteur.fr/ip/easysite/pasteur/en/press/press-kits/hiv-aids-research-at-the-institut-pasteur>

Case Study 2**SOWING THE SEEDS OF HEALTH**

1. Information about the Millennium Seed Bank at Kew

<http://www.kew.org/science-conservation/save-seed-prosper/millennium-seed-bank/index.htm>

2. Information and statistics about tobacco

<http://www.who.int/tobacco/en/>

3. Aspirin factsheet

http://www.nhsdirect.nhs.uk/FemaleSexualHealthSelfCare/~/_media/SATFiles/MedicinesForPainFactSheets/Aspirin.ashx

All web references correct at time of production

Other references should also be researched

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